

APPENDIX 1

ARIZONA ADMINISTRATIVE CODE REFERENCES

CHAPTER V - WATER SUPPLY

ARTICLE 1. GENERAL REQUIREMENTS

R18-4-101. Definitions

The terms in this Chapter have the following meanings:

"Action level" means a concentration of 0.015 mg/L for lead or 1.3 mg/L for copper.

"ADHS" means the Arizona Department of Health Services.

"Air-gap separation" means a physical separation, between the discharge end of a supply pipe and the top rim of its receiving vessel, of at least 1 inch or twice the diameter of the supply pipe, whichever is greater.

"ANSI/NSF Standard 60" means American National Standards Institute/NSF International Standard 60 - 2000a, Drinking Water Treatment Chemicals - Health Effects, November 2000, incorporated by reference and on file with the Department and the Office of the Secretary of State. This material is available from NSF International, 789 North Dixboro Road, P.O. Box 130140, Ann Arbor, MI 48113-0140, USA; (734) 769-8010; <http://www.nsf.org>. This incorporation by reference includes no future editions or amendments.

"ANSI/NSF Standard 61" means American National Standards Institute/NSF International Standard 61 - 2000a, Drinking Water System Components - Health Effects, November 2000, incorporated by reference and on file with the Department and the Office of the Secretary of State. This material is available from NSF International, 789 North Dixboro Road, P.O. Box 130140, Ann Arbor, MI 48113-0140, USA; (734) 769-8010; <http://www.nsf.org>. This incorporation by reference includes no future editions or amendments.

"Backflow" means a reverse flow condition that causes water or mixtures of water and other liquids, gases, or substances to flow back into the distribution system. Backflow can be created by a difference in water pressure (backpressure), a vacuum or partial vacuum (backsiphonage), or a combination of both.

"Backflow-prevention assembly" means a mechanical device used to prevent backflow.

"Baseline sampling" means the routine monitoring of contaminants covered under the monitoring assistance program to determine compliance with the MCLs listed in Article 2 and the monitoring requirements listed in Article 4, not including repeat monitoring necessary for compliance after detection of a contaminant or a MCL violation.

"BAT" means best available technology.

"Best available technology" means a technology, treatment technique, or other means that is identified by EPA, after examination for efficacy under field conditions and not solely under laboratory conditions, as being the best available for removing or reducing the concentration of a contaminant in water, taking costs into consideration.

"CCR" means Consumer Confidence Report.

"Certified operator" has the meaning prescribed by R18-5-101.

"Coagulation" means a treatment process that uses coagulant chemicals and mixing to destabilize and agglomerate colloidal and suspended materials into flocs.

"Community water system" means a public water system that serves 15 or more service connections used by year-round residents or that serves 25 or more year-round residents.

"Compliance cycle" means a nine-calendar-year time-frame during which a public water system is required to monitor. Each compliance cycle consists of three 3-year compliance periods. The first compliance cycle began January 1, 1993, and ends December 31, 2001. The second compliance cycle begins January 1, 2002, and ends December 31, 2010. The third compliance cycle begins January 1, 2011, and ends December 31, 2019.

"Compliance period" means a three-calendar-year time-frame within a compliance cycle. Within the first compliance cycle, the first compliance period began January 1, 1993, and ended December 31, 1995. The second compliance period began January 1, 1996, and ended December 31, 1998. The third compliance period began January 1, 1999, and ends December 31, 2001.

"Consecutive public water system" means a public water system that obtains all of its water from another public water system that is regulated by the Department.

"Contaminant" means any physical, chemical, biological, or radiological substance in water.

"Contractor" means a private party or statewide nonprofit organization representing a water system, with which the Department contracts to implement the monitoring assistance program under A.R.S. § 49-360(B).

"Conventional filtration" means a series of treatment processes, including coagulation, flocculation, sedimentation, and filtration that result in substantial particulate removal.

"Corrosion inhibitor" means a substance that reduces corrosion of metal plumbing materials, especially lead and copper, by forming a protective film on the interior surface of those materials.

"Cross connection" means a physical connection between a public water system and any source of water or other substance that may lead to contamination of the water provided by the public water system through backflow.

"CWS" means community water system.

"Detected" means measured in a laboratory at a concentration that is at or above the method detection limit.

"Diatomaceous earth filtration" means a treatment process that results in substantial particulate removal in which a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum) and, while the water is filtered through the precoat cake on the septum, additional filter media (body feed) is continuously added to the feed water to maintain the permeability of the precoat cake.

"Direct filtration" means a series of treatment processes, including coagulation and filtration but excluding sedimentation, that result in substantial particulate removal.

"Disinfectant" means an oxidant, including chlorine, chlorine dioxide, chloramines, ozone, or an equivalent agent or process such as ultraviolet light, that kills or inactivates pathogenic organisms.

"Disinfection" means a treatment process that kills or inactivates pathogenic organisms in water by oxidants, ultraviolet light, or equivalent agents.

"Distribution system" means a pipeline, appurtenance, device, and facility of a public water system that conducts water from a source or water treatment plant to persons served by the system.

"Domestic or other non-distribution system plumbing problem" means a total coliform contamination problem in a public water system with more than one service connection that is limited to a specific service connection from which a total coliform-positive sample is taken.

"Dose equivalent" means the product of an absorbed dose from ionizing radiation and factors that account for differences in biological effectiveness due to the type of radiation and its distribution in the body as specified by the International Commission on Radiological Units and Measurements.

"Double check valve assembly" means a backflow-prevention assembly that contains two independently acting check valves with tightly closing, resilient-seated shut-off valves on each end of the assembly and properly located, resilient-seated test cocks.

"Elementary business plan" means a document containing all items, required to be submitted for evaluation, necessary for a complete review for technical, managerial, and financial capacity of a new public water system under Article 6.

"EPA" means the United States Environmental Protection Agency.

"Exclusion" means a waiver granted by the Department under R18-4-112 from a requirement of this Chapter that is not a requirement contained in 40 CFR 141, the National Primary Drinking Water Regulations.

"Exemption" means a temporary deviation from a MCL or treatment technique required in this Chapter that is granted by the Department under R18-4-111.

"Existing public water system" means a public water system, as defined in A.R.S. § 49-352(B)(1), issued a public water system identification number by the Department before October 1, 1999.

"Filtration" means a treatment process for removing particulate matter from water by passage through porous media.

"Financial capacity" means the ability of a public water system to acquire and manage sufficient financial resources for the system to achieve and maintain compliance with the federal Safe Drinking Water Act.

"First-draw sample" means a 1-liter sample of tap water, collected in accordance with R18-4-310(D).

"Flocculation" means a treatment process to enhance agglomeration or collection of smaller floc particles into larger and more easily settleable particles through gentle stirring by hydraulic or mechanical means.

"GAC" means granular activated carbon.

"GC" means gas chromatography.

"GC/MS" means gas chromatography-mass spectrometry.

"Gross alpha particle activity" means the total radioactivity due to alpha particle emission as inferred from measurements on a dry sample.

"Gross beta particle activity" means the total radioactivity due to beta particle emission as inferred from measurements on a dry sample.

"Groundwater system" means a public water system that is supplied solely by groundwater that is not under the direct influence of surface water.

"Groundwater under the direct influence of surface water" means any water beneath the surface of the ground with:
 A significant occurrence of insects or other macroorganisms, algae, large diameter pathogens such as *Giardia lamblia*, or total coliform; or
 Significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH that closely correlate to climatological or surface water conditions.

"Halogenated" means treated or mixed with chlorine, bromine, or iodine.

"HPC" means heterotrophic plate count.

"Initial compliance period" means the first full 3-year compliance period in a compliance cycle that a public water system conducts initial monitoring.

"Initial monitoring year" means the calendar year designated by the Department within a compliance period in which a public water system conducts initial monitoring at a sampling point.

"Large water system," for R18-4-306 through R18-4-316 only, means a public water system that serves more than 50,000 persons.

"Lead-free" means that the pipe, solder, or flux used in the installation or repair of a public water system, or in a residential or non-residential facility that provides water for human consumption and is connected to the public water system, meets the following criteria:

All solders and flux contain not more than 0.2% lead.

All pipes and pipe fittings contain not more than 8.0% lead.

When used with respect to plumbing fittings and fixtures intended by the manufacturer to dispense water for human ingestion,

"lead-free" means fittings and fixtures that are in compliance with ANSI/NSF Standard 61, Section 9.

"Lead service line" means a service line made of lead that connects a water main to a building inlet and any lead pigtail, gooseneck, or fitting that is connected to the service line.

"Log" means the percentage removal or inactivation of *Giardia lamblia* cysts or viruses as follows:

"One-log" is 90%.

"Two-log" is 99%.

"Three-log" is 99.9%.

"Four-log" is 99.99%.

"Major stockholder" means a person who has 20% or more ownership interest in a public water system.

"Man-made beta particle and photon emitters" means all radionuclides emitting beta particles or photons, except the daughter products of Thorium-232, Uranium-235, and Uranium-238, listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," Handbook 69, U.S. Department of Commerce, National Bureau of Standards, amended as of August 1963 (and no future editions or amendments), incorporated by reference and on file with the Office of the Secretary of State and the Department. Copies of Handbook 69 are also available from the Library of Congress, 101 Independence Avenue, S.E., Washington D.C., 20540, by telephoning (202) 707-5640.

"Managerial capacity" means the ability of a public water system to conduct its affairs in a manner that will meet and maintain compliance with the requirements of the federal Safe Drinking Water Act.

"Maximum contaminant level" means the maximum permissible level for a contaminant in drinking water that is delivered to any person who is served by a public water system.

"Maximum total trihalomethane potential" means the maximum concentration of total trihalomethanes produced in water containing a disinfectant residual after seven days at a temperature of 25° C or above.

"MCL" means maximum contaminant level.

"MFL" means million fibers per liter greater than 10 microns in length.

"Medium water system," for R18-4-306 through R18-4-316 only, means a public water system that serves more than 3,300 persons and 50,000 or fewer persons.

"Meter" means a device that measures the volume of water that passes through it.

"Meter weight" means the number of gallons per minute (gpm) that flows through a meter divided by 30.

"Millirem" means 1/1000 of a rem.

"MTP" means maximum total trihalomethane potential.

"Monitoring assistance program" means the program established by A.R.S. § 49-360, under which a contractor provides for collection, transportation, and analysis of samples from a public water system under the provisions of R18-4-224 through R18-4-226.

"Nephelometric turbidity unit" means the unit of measure for turbidity. Turbidity is a measure of light scatter or absorption caused by suspended or colloidal matter in water. Turbidity is measured as an indicator of the effectiveness of filtration treatment.

"New public water system" means a public water system, as defined in A.R.S. § 49-352(B)(1), that is issued its first unique public water system identification number by the Department on or after October 1, 1999.

"Noncommunity water system" means a public water system that is either a nontransient, noncommunity water system or a transient, noncommunity water system.

"Nontransient, noncommunity water system" means a public water system that:

Serves 15 or more service connections that are used by the same persons for at least six months per year, or

Serves the same 25 or more persons for at least six months per year.

"NTNCWS" means nontransient, noncommunity water system.

"NTU" means nephelometric turbidity unit.

"Optimal corrosion control treatment" means the corrosion control treatment that minimizes lead and copper concentrations at the tap without violating any rule prescribed in this Chapter.

"OX" means chlorine or ozone oxidation.

"PCBs" means polychlorinated biphenyls.

"pCi" means picocurie.

"Picocurie" means the quantity of radioactive material producing 2.22 nuclear transformations per minute.

"Point-of-entry into the distribution system" means the point at which water is discharged into the distribution system from a well, storage tank, pressure tank, or water treatment plant.

"Point-of-entry treatment device" means a device that applies treatment to drinking water entering a house or building to reduce contaminants in the drinking water that is distributed throughout the house or building.

"Point-of-use treatment device" means a device that applies treatment to drinking water flowing to a single tap to reduce contaminants in the drinking water at that single tap.

"Pressure vacuum breaker assembly" means a backsiphonage prevention assembly that contains an independently operated, internally loaded check valve; an internally operated air-inlet valve located on the discharge side of the check valve; tightly closing resilient seated shut-off valves on each end of the check valve assembly; and properly located resilient seated test cocks.

"PTA" means packed tower aeration.

"Public water system" has the same meaning prescribed in A.R.S. § 49-352. A public water system is either a community water system; a nontransient, noncommunity water system; or a transient, noncommunity water system.

"Reduced pressure principle backflow-prevention assembly" means a backflow-prevention assembly that contains two independently acting check valves; a hydraulically operating, mechanically independent pressure differential relief valve located between the two check valves; tightly closing, resilient seated shut-off valves on each end of the check valve assembly; and properly located resilient seated test cocks.

"Rem" means the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system.

"Repeat compliance period" means any compliance period after the initial compliance period.

"Residual disinfectant concentration" means the concentration of disinfectant measured in mg/L in a representative sample of water.

"Safe Drinking Water Act" means the federal Safe Drinking Water Act as amended (42 U.S.C. 300f et seq., Title XIV of the Public Health Service Act).

"Sanitary survey" means an onsite review of the water source, facilities, equipment, operation, and maintenance of a public water system to evaluate their adequacy to produce and distribute safe drinking water.

"Sedimentation" means a treatment process that holds water in a low-flow condition before filtration to remove solids by gravity or separation.

"Service connection" means a location at the meter or, in the absence of a meter, at the curbstop or at the building inlet.

"Service line" means the water line that runs from the corporation stop at a water main to the building inlet, including any pigtail, gooseneck, or fitting.

"Service line sample" means a one liter sample of water collected in accordance with R18-4-315(D).

"Single-family structure" means a building constructed as a single-family residence that is used as a residence or as a place of business.

"Slow sand filtration" means a treatment process that involves the passage of raw water through a bed of sand at low velocity, generally less than 0.4 m/h, and results in substantial particulate removal by physical and biological mechanisms.

"Small water system," for R18-4-306 through R18-4-316 only, means a public water system that serves 3,300 or fewer persons.

"SOC" means synthetic organic chemical.

"Source" means a body of water above or below the ground that supplies water to a public water system, including a well, spring, or surface water.

"Standard sample" means the aliquot of finished drinking water that is examined for the presence of coliform bacteria. The standard sample volume is 100 milliliters.

"Surface water" means a source that is exposed to the unenclosed atmosphere and subject to surface runoff.

"Surface water system" means a public water system that uses surface water or groundwater under the direct influence of surface water, in whole or in part, as a source.

"TNCWS" means transient, noncommunity water system.

"Technical capacity" means the ability of a public water system to meet the requirements of R18-4-603 and the federal Safe Drinking Water Act at all times, and includes the ability to correct problems with its distribution, water quality, or source availability and to sustain compliance with its operations and maintenance plan.

"Total trihalomethanes" means the sum of the concentrations of the following trihalomethane compounds: trichloromethane (chloroform), dibromochloromethane, bromo-dichloromethane, and tribromomethane (bromoform).

"Transient, noncommunity water system" means a public water system that:

Serves 15 or more service connections, but does not serve 15 or more service connections that are used by the same persons for more than six months per year; or

Serves an average of at least 25 persons per day for at least 60 days per year, but does not serve the same 25 persons for more than six months per year.

"Treatment" means a process that changes the quality of water by physical, chemical, or biological means.

"Treatment technique" means a treatment procedure promulgated by EPA in lieu of a MCL. Treatment techniques include the requirements for filtration, disinfection, lead, copper, acrylamide, and epichlorohydrin that are prescribed in Article 3 of this Chapter.

"Trihalomethane" means one of the family of organic compounds, named as derivatives of methane, in which three of four hydrogen atoms in methane are substituted by a halogen atom in the molecular structure.

"TTHM" means total trihalomethanes.

"Unit fee" means the amount charged to a public water system under the monitoring assistance program for a meter weight of 1 in accordance with R18-4-225.

"Virus" means an enteric virus that is infectious to humans by waterborne transmission.

"VOC" means volatile organic chemical.

"Water main" means a pipe used to distribute drinking water to more than one property and is exterior to buildings.

"Water supplier" means a person who owns, supervises, or directs the operation of a public water system.

"Waterborne disease outbreak" means the occurrence of illness that is epidemiologically associated with the ingestion of drinking water from a public water system.

"Water treatment plant" means a process, device, or structure used to improve the physical, chemical, or biological quality of the water in a public water system. A booster chlorination facility that is designed to maintain an effective disinfectant residual in water in the distribution system is not a water treatment plant.

Historical Note

Former Section R9-20-504 repealed, new Section R9-20-504 adopted effective November 1, 1979 (Supp. 79-6). Former Section R9-20-504 amended, renumbered as Section R9-20-501, then renumbered as Section R18-4-101 effective October 23, 1987 (Supp. 87-4). R18-4-101 recodified to R18-5-101 (Supp. 95-2). New Section adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended effective December 8, 1998 (Supp. 98-4). Amended by final rulemaking effective September 23, 1999; the A.A.R. citation was not available at the time of publication and will appear in Supp. 99-4 (Supp. 99-3). Amended by final rulemaking at 5 A.A.R. 4456, effective September 23, 1999 (Supp. 99-4). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-102. Applicability

A. The rules in this Chapter apply to public water systems, unless a public water system:

1. Consists only of distribution and storage facilities and does not have collection or treatment facilities;
2. Obtains all of its water from, but is not owned or operated by, a public water system that is regulated under this Chapter;
3. Does not sell water to any person; and
4. Is not a carrier that conveys passengers in interstate commerce.

B. The rules in this Chapter do not apply to a public water system for a mobile home park that:

1. Consists only of distribution and storage facilities and does not have collection or treatment facilities;
2. Obtains all of its water from, but is not owned or operated by, a public water system that is regulated under this Chapter; and
3. Does not sell water to any person. For purposes of this subsection, submetering by a mobile home park to determine the quantity of water used by individual park tenants shall not be considered to be selling water, if the submetering is for the purpose of water conservation.

Historical Note

Adopted as Section R9-20-502 and renumbered as Section R18-4-102 effective October 23, 1987 (Supp. 87-4). R18-4-102 recodified to R18-5-102 (Supp. 95-2). New Section adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-103. Recordkeeping Requirements

A. A public water system shall retain on its premises or at a convenient location near its premises, the following records for the following minimum periods of time:

1. Records of bacteriological analyses, including records of analyses for total coliform, fecal coliform, *Escherichia coli* (*E. coli*), and heterotrophic bacteria for five years;
2. Records of chemical analyses for 10 years;
3. Records of actions taken by the public water system to correct a violation of this Chapter for three years after the last action taken to correct the violation;

4. Records concerning a variance or exemption granted to the public water system for five years after the expiration of the variance or exemption;
5. Copies of written reports, summaries, or communications relating to a sanitary survey of the public water system for 10 years after completion of the sanitary survey; and
6. Records of all sampling data and analyses, reports, surveys, letters, evaluations, schedules, Department determinations, and any other information required in R18-4-306 through R18-4-316 for 12 years.
7. A surface water system shall retain the following records for 10 years:
 - a. Records of turbidity measurements, including the number and percentage of filtered water turbidity measurements taken during the month that are less than or equal to the turbidity limits specified in R18-4-302 for the filtration technology used;
 - b. The date and value of any turbidity measurement taken during a month that exceeds 5 NTUs;
 - c. Records of the lowest residual disinfectant concentration (in mg/L) in water entering the distribution system for each day that each water treatment plant operates;
 - d. Records of the residual disinfectant concentration (in mg/L) in water for each sampling site in the distribution system; and
 - e. Records of analyses for heterotrophic bacteria if HPC is measured instead of residual disinfectant concentration in the distribution system.
- B. A public water system shall keep the original laboratory reports of drinking water analyses or copies of Department-approved reporting forms.

Historical Note

Former Section R9-20-505 repealed, new Section R9-20-505 adopted effective November 1, 1979 (Supp. 79-6). Former Section R9-20-505 amended, renumbered as Section R9-20-503, then renumbered as Section R18-4-103 effective October 23, 1987 (Supp. 87-4). R18-4-103 recodified to R18-5-103 (Supp. 95-2). New Section adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-104. Reporting Requirements

- A. Routine monitoring. Except as specified in this subsection, a public water system or a contractor shall report the result of any test measurement or analysis required by Article 2 to the Department within 10 days after the end of the month in which the public water system receives the analytical result or within 10 days after the end of an applicable monitoring period prescribed by Article 2, whichever occurs first.
1. Fecal coliform or E coli: If any routine or repeat sample for total coliform is positive, the public water system shall have the total coliform-positive sample analyzed to determine whether fecal coliforms are present, except that the public water system may test for E. coli instead of fecal coliforms. If fecal coliforms or E. coli are present in a total coliform-positive sample, the public water system shall report the positive results to the Department, by telephone or facsimile, as soon as possible but no later than 24 hours after receipt of the fecal coliform-positive or E. coli-positive test result.
 2. Nitrate: If a monitoring result is greater than the MCL for nitrate in a routine sample, the public water system shall take a confirmation sample within 24 hours of receipt of the analytical results. The public water system shall report the MCL exceedance to the Department by telephone or facsimile, as soon as possible but no later than 24 hours after receipt of the analytical results.
 3. Total trihalomethanes: A public water system shall report the arithmetic average of analytical results for total trihalomethanes within 30 days of receipt of the last analytical results of the previous quarter.
- B. MCL violations. Except as specified in this subsection, a public water system shall report a violation of a MCL to the Department within 48 hours of receipt of analytical results that indicate a violation.
1. A public water system shall report a violation of the MCL for total coliform to the Department, by telephone or facsimile, as soon as possible but no later than 24 hours after receipt of analytical results that indicate a violation.
 2. A public water system shall report a violation of the MCL for nitrate or nitrite to the Department, by telephone or facsimile, as soon as possible but no later than 24 hours after receipt of analytical results for the confirmation sample that confirms a violation.
 3. A public water system shall report a violation of an interim MCL for turbidity to the Department, by telephone or facsimile:
 - a. Within 10 days after the end of the month if the arithmetic average of the analytical results of daily samples taken during the month exceeds 1 NTU.
 - b. Within 48 hours of receipt of analytical results for the second daily sample if the arithmetic average of the results of daily samples taken on two consecutive days exceeds 5 NTUs.
- C. Filtration. Except as provided in subsection (C)(4), a surface water system that provides filtration shall report the following turbidity measurements to the Department within 10 days after the end of each month for each water treatment plant that operates during the month:
1. The total number of filtered water turbidity measurements taken during the month,
 2. The number and percentage of filtered water turbidity measurements taken during the month that are less than or equal to the turbidity limits prescribed in R18-4-302 for the filtration technology used, and

3. The date and value of any filtered water turbidity measurement taken during the month that exceeds 5 NTUs.
4. If the turbidity of the filtered water exceeds 5 NTUs, the surface water system shall report the exceedance to the Department, by telephone or facsimile, as soon as possible but no later than 24 hours after the exceedance.
- D. Disinfection. Except as provided in subsection (D)(4), a surface water system that provides disinfection shall report the following information to the Department within 10 days after the end of each month for each water treatment plant that operates during the month:
 1. For each day, the lowest measurement of residual disinfectant concentration in mg/L in water entering the distribution system;
 2. The date and duration of each period the residual disinfectant concentration in water entering the distribution system fell below 0.2 mg/L; and
 3. The value of "V" calculated by the formula prescribed in R18-4-303(C)(2) for the current and previous month.
 4. If the residual disinfectant concentration falls below 0.2 mg/L in water entering the distribution system, the surface water system shall report the occurrence to the Department as soon as possible but no later than 24 hours after the occurrence. The surface water system shall report whether the residual disinfectant concentration was restored to at least 0.2 mg/L within four hours.
- E. Tap water monitoring for lead and copper. A public water system that monitors for lead and copper under R18-4-310 or R18-4-313 shall report the following information to the Department within 10 days after the end of the monitoring period:
 1. The results of all tap water samples, the location of each sample site, and the criteria specified in either R18-4-309(A)(1), or R18-4-309(A)(2), or both, used to select the site for the system's sampling pool.
 2. The 90th percentile lead and copper concentrations for all lead and copper tap water samples collected during each monitoring period (as calculated in accordance with R18-4-308), unless the Department notifies the public water system that the Department will calculate the 90th percentile lead and copper concentrations and will notify the public water system of the 90th percentile concentrations.
 3. Identification of all non-first-draw sample sites selected by the public water system and the length of the standing time for each substitute sample collected according to R18-4-310(D)(3).
 4. A list of sampling sites that were not sampled in the previous monitoring period and an explanation for the change in sampling sites.
 5. The results of any tap water samples collected in addition to the minimum required in R18-4-310 and R18-4-313.
 6. Documentation of all lead and copper tap water samples for which the public water system requests invalidation under R18-4-310(P).
- F. Corrosion control treatment. A public water system that is required under R18-4-313(A) to install optimal corrosion control treatment, shall submit a letter to the Department certifying that the public water system has completed installation of the optimal corrosion control treatment. The public water system shall submit the certification within 24 months after the date the Department designates the treatment.
- G. Water quality parameter monitoring. A public water system that monitors for water quality parameters at the tap or source under R18-4-311 or R18-4-313 shall report the results of all water quality parameter samples to the Department within 10 days after the end of the monitoring period. The public water system shall also report the results of any water quality parameter samples collected in addition to the minimum required in R18-4-311 and R18-4-313.
- H. Source water monitoring for lead and copper. A public water system that monitors source water for lead and copper under R18-4-314 shall report the following information to the Department within 10 days after the end of the monitoring period:
 1. The results of all source water samples,
 2. A list of sampling points that were not sampled in the previous monitoring period and an explanation for the change in sampling points, and
 3. The results of any source water samples collected in addition to the minimum required in R18-4-314.
- I. Source water treatment. A public water system shall report the following information to the Department within the following minimum time periods:
 1. Within six months after a public water system exceeds the action level for lead or copper, the public water system shall submit a letter to the Department that makes a recommendation regarding installation and operation of source water treatment. If the public water system demonstrates that source water treatment is not necessary to minimize lead or copper levels at taps, the public water system may recommend that no source water treatment be installed.
 2. If the Department determines that source water treatment is necessary under R18-4-314(E), the public water system shall submit a letter that certifies that the public water system has installed the source water treatment designated or approved by the Department within 24 months after receipt of a written determination by the Department that source water treatment is necessary.
- J. Lead service line replacement. A public water system that is required to replace lead service lines under R18-4-315 shall report the following information to the Department:
 1. A public water system that exceeds the action level for lead after installation of either corrosion control, or source water treatment, or both, shall, within 12 months after the public water system exceeds the action level for lead:

- a. Conduct a materials survey and include the information required in the initial materials survey conducted under R18-4-309(B) to identify the initial number of lead service lines in its distribution system;
- b. Submit a report to the Department that contains the results of the materials survey and a schedule for the annual replacement of at least 7% of the initial number of lead service lines in its distribution system; and
- c. Submit a letter to the Department that demonstrates that the public water system has either:
 - i. Replaced at least 7% of the initial number of lead service lines or a greater percentage of lead service lines specified by the Department under R18-4-315(F) in the previous 12 months, or
 - ii. Conducted sampling that demonstrates that the lead concentration in all lead service line samples collected under R18-4-315(D) from an individual service line are less than or equal to 0.015 mg/L. If the public water system conducted lead monitoring of individual lead service lines, the letter shall document the number of lead service lines with lead concentrations that are less than or equal to 0.015 mg/L and the number of lead service lines replaced. The total number of lead service lines with lead concentrations that are less than or equal to 0.015 mg/L plus the number of lead service lines replaced shall equal at least 7% of the initial number of lead service lines or the larger percentage specified by the Department under R18-4-315(F).
2. The public water system shall submit an annual letter to the Department that contains the following information:
 - a. The information required in subsections (J)(1)(c)(i) and (J)(1)(c)(ii), as applicable;
 - b. The number of lead service lines scheduled to be replaced during the previous year of the system's lead service line replacement program;
 - c. The number and location of each lead service line replaced during the previous year of the system's lead service line replacement program;
 - d. If measured, the lead concentration and location of each lead service line sampled, the sampling method, and the date of sampling; and
 - e. Certification that all partial lead service line replacement activities required in R18-4-315(E) have been completed, if applicable.
- K. Special monitoring. A public water system, or a contractor that conducts special monitoring required in Article 4, shall report the following information to the Department:
 1. For sodium required in R18-4-401, the sodium monitoring results within 10 days after the end of the month in which the public water system receives the analytical results.
 2. For nickel required in R18-4-402, the nickel monitoring results within 10 days after the end of the month in which the public water system receives the analytical result or within 10 days after the end of an applicable monitoring period prescribed by R18-4-402, whichever occurs first.
- L. Failure to comply with monitoring requirements. A public water system shall report the failure to comply with any monitoring requirement prescribed in this Chapter, including a monitoring requirement covered by the monitoring assistance program in this Chapter, to the Department within 48 hours, except that a public water system that fails to comply with a total coliform monitoring requirement shall report the monitoring violation to the Department within 10 days after discovery.
- M. Cross connection incidents. A public water system shall submit a written cross connection incident report to the Department and the local county health department within five days of the occurrence of a cross connection problem that results in contamination of water provided by the public water system. The report shall address all of the following:
 1. Date and time of discovery of the cross connection incident,
 2. Nature of the cross connection incident,
 3. Affected area,
 4. Cause of the cross connection incident,
 5. Public health impact,
 6. Date and text of any public health advisory issued,
 7. Corrective action taken, and
 8. Date of completion of corrective action.
- N. Emergencies. A public water system shall notify the Department, by telephone or facsimile, as soon as possible but no later than 24 hours after the occurrence of any of the following emergencies:
 1. Loss of water supply from a source;
 2. Loss of water supply due to major component failure;
 3. Damage to power supply equipment or loss of power;
 4. Contamination of water in the distribution system from backflow;
 5. Collapse of a reservoir, reservoir roof, or pumphouse structure;
 6. Break in a transmission or distribution line that results in a loss of service to customers for more than four hours; and
 7. Chemical or microbiological contamination of the water supply.
- O. Waterborne disease outbreak. A public water system shall report to the Department the occurrence of a waterborne disease outbreak that may be attributable to water provided by the public water system as soon as possible but no later than 24 hours after actual notice of the waterborne disease outbreak.

P. Confirmation sample results. A public water system shall report the analytical results of any confirmation sample required by the Department, except a confirmation sample obtained by a contractor under the monitoring assistance program, within 24 hours after receipt of the analytical results.

Q. Copies of public notices. A public water system shall submit to the Department within 10 days after the date of completion of a public notice, a representative copy of each type of public notice required in R18-4-105 that is distributed, published, posted, or made available to persons served by the public water system or to the media and an affidavit that describes how the public notice was provided.

R. Department requests for records. A public water system shall submit to the Department, within the time stated in the request, copies of any records that the public water system maintains under R18-4-103 or copies of any documents that the Department is entitled to inspect under 42 U.S.C. 300j-4 (2001).

S. Department reporting forms. A public water system shall report to the Department the results of all analyses completed under this Chapter on Department-approved forms.

T. Direct reporting. A public water system may contract with a laboratory or another agent to report monitoring results to the Department, but the public water system remains legally responsible for compliance with reporting requirements.

U. Reporting limits. A public water system shall not report an analytical result as "not detected" or "ND" without a specific reference to a numeric "less than value" [that is, "< x" where x is a numeric concentration]. A public water system shall not report a "less than value" at a concentration that exceeds any of the following reporting limits:

1. Single point-of-entry sample:

a. Inorganic chemicals (except nitrate, nitrite, fluoride, lead and copper): The reporting limit is the MCL for the inorganic chemical.

b. Nitrate: 5 mg/L.

c. Nitrite: 0.5 mg/L.

d. Fluoride: 2.0 mg/L.

e. VOCs: 0.0005 mg/L.

f. SOCs:

Synthetic Organic Chemical	Reporting Limit [in mg/L]
Alachlor	0.0002
Atrazine	0.0001
Benzo(a)pyrene	0.00002
Carbofuran	0.0009
Chlordane	0.0002
2,4-D	0.0001
Dalapon	0.001
Dibromochloropropane (DBCP)	0.00002
Di(2-ethylhexyl)adipate	0.0006
Di(2-ethylhexyl)phthalate	0.0006
Dinoseb	0.0002
Diquat	0.0004
Endothall	0.009
Endrin	0.00001
Ethylene dibromide (EDB)	0.00001
Glyphosate	0.006
Heptachlor	0.00004
Heptachlor epoxide	0.00002
Hexachlorobenzene	0.0001
Hexachlorocyclopentadiene	0.0001
Lindane	0.00002
Methoxychlor	0.0001
Oxamyl	0.002
PCBs (as decachlorobiphenyl)	0.0001
Pentachlorophenol	0.00004
Picloram	0.0001

Simazine	0.00007
2,3,7,8-TCDD (Dioxin)	0.000000005
Toxaphene	0.001
2,4,5-TP (Silvex)	0.0002

2. Composite samples:

a. Inorganic chemicals (except lead and copper): The reporting limit is 1/5 of the MCL for the inorganic chemical.

b. VOCs: 0.0005 mg/L.

c. SOC: The reporting limit for a SOC composite sample is the same as the reporting limit for a SOC single sample listed under subsection (U)(1)(f), except for toxaphene, which has a reporting limit that is less than or equal to 0.0006 mg/L.

3. Radiochemical reporting limits: The reporting limit for a radiochemical shall be that concentration that can be counted with a precision of plus or minus 100% at the 95% confidence level (1.96 F where F is the standard deviation of the net counting rate of the sample).

a. Radium-226: 1 pCi/L.

b. Radium-228: 1 pCi/L.

c. Gross alpha particle activity: 3 pCi/L.

d. Man-made beta particle and photon emitters:

Man-made Beta Particle and Photon Emitters	Reporting Limit
i. Tritium	1,000 pCi/L
ii. Strontium-89	10 pCi/L
iii. Strontium-90	2 pCi/L
iv. Iodine-131	1 pCi/L
v. Cesium-134	10 pCi/L
vi. Gross beta	4 pCi/L
vii. Other radionuclides	1/10 of the applicable limit

4. Lead and copper reporting limits:

A public water system shall report all lead levels measured between 0.005 mg/L and the method detection limit as measured or as 0.0025 mg/L. A public water system shall report all copper levels measured between 0.050 mg/L and the method detection limit as measured or as 0.025 mg/L. A public water system shall report all lead and copper levels measured below the method detection limits for lead and copper as zero.

V. Failure to comply with any of the provisions of this Chapter. A public water system shall report the failure to comply with any of the provisions of this Chapter to the Department within 48 hours, except where a different reporting period is specified in this Section.

Historical Note

Former Section R9-20-506 repealed, new Section R9-20-506 adopted effective November 1, 1979 (Supp. 79-6). Amended effective March 19, 1980 (Supp. 80-2). Former Section R9-20-506 amended, renumbered as Section R9-20-504, then renumbered as Section R18-4-104 effective October 23, 1987 (Supp. 87-4). R18-4-104 recodified to R18-5-104 (Supp. 95-2). New Section adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended effective December 8, 1998 (Supp. 98-4). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-105. Public Notification Requirements

A. MCL or treatment technique violations: A water supplier of a public water system that fails to comply with an applicable MCL or a treatment technique requirement shall provide public notice to persons served by the system as follows:

1. Publish notice in a daily newspaper of general circulation in the area served by the system as soon as possible but not later than 14 days after the violation. If the area served by a public water system is not served by a daily newspaper of general circulation, the water supplier shall provide public notice by publication in a weekly newspaper of general circulation serving the area; and

2. Mail delivery of a notice of the violation by direct mail or with the water bill not later than 45 days after the violation. The Department may waive mail delivery of the notice if the water supplier corrects the violation within the 45-day period.

B. Acute violations: In addition to the public notice requirements prescribed in subsection (A), a water supplier shall provide public notice by television or radio broadcast for an acute violation defined in this subsection. A water supplier shall provide a copy of the public notice to radio and television stations that broadcast to the area served by the system as soon as possible but not later than 72 hours after an acute violation occurs. An acute violation is:

1. A violation of a MCL for total coliform when fecal coliforms or E. coli are present as specified in R18-4-202(A)(3) or R18-4-202(A)(4).

2. A violation of the MCL for nitrate or nitrite specified in R18-4-205.

3. An occurrence of a waterborne disease outbreak that is attributable to water distributed by the public water system.
- C. Monitoring violations, exemptions, and variances: A water supplier of a public water system that fails to conduct required monitoring, fails to use approved analytical methods, or that obtains an exemption or variance from the Department shall give public notice as follows:
1. Publish notice in a daily newspaper of general circulation within 3 months of the monitoring violation or the grant of an exemption or variance, or
 2. If the area served by the public water system is not served by a daily newspaper of general circulation, a water supplier shall publish notice in a weekly newspaper of general circulation serving the area within 3 months of the monitoring violation or the grant of an exemption or variance.
- D. Alternative public notification procedures:
1. Community water systems: A water supplier of a community water system that is located in an area that is not served by radio, television, or a daily or weekly newspaper of general circulation shall provide public notice by hand delivery or continuous posting in conspicuous places within the area served by the system. Posting shall continue for a minimum of 10 days and as long as a violation exists or for as long as an exemption or variance remains in effect.
 - a. Acute violations: A water supplier shall provide public notice of an acute violation by hand delivery or posting as soon as possible but not later than 72 hours after an acute violation occurs.
 - b. MCL or treatment technique violations: A water supplier shall provide public notice of a MCL or treatment technique violation by hand delivery or posting within 14 days after a violation occurs.
 - c. Monitoring violations exemptions, and variances: A water supplier shall provide public notice by hand delivery or by posting within 3 months of a monitoring violation or the grant of an exemption or variance by the Department.
 2. Noncommunity water systems: Instead of providing public notice as prescribed in subsection (A), (B), or (C), a water supplier of a noncommunity water system may provide public notice by hand delivery or by continuous posting in conspicuous places within the area served by the noncommunity system. Posting shall continue for a minimum of 10 days and for as long as a violation exists or an exemption or variance remains in effect.
 - a. Acute violations: A water supplier of a noncommunity water system may provide public notice by hand delivery or posting as soon as possible but not later than 72 hours after an acute violation occurs;
 - b. MCL or treatment technique violations: A water supplier of a noncommunity water system may provide public notice by hand delivery or posting within 14 days after a MCL or treatment technique violation occurs.
 - c. Monitoring violations, exemptions, and variances: A water supplier of a noncommunity water system may provide public notice by hand delivery or posting within 3 months of a monitoring violation or the grant of an exemption or variance by the Department.
- E. Repeat public notice: The water supplier shall give repeat public notice at least once every 3 months by mail delivery (by direct mail or with the water bill) for as long as any violation exists. The water supplier shall give repeat public notice of the existence of a variance or exemption every 3 months for as long as the variance or exemption remains in effect. For a community water system or a noncommunity water system that provides public notice by posting, repeat public notice requirements are satisfied by continuous posting.
- F. Limited public notice: The water supplier may give public notice to only a portion of the population served by a public water system if the water supplier demonstrates that only a segment of the population served by the public water system is affected by the problem which results in the need for public notice.
- G. Notice to new customers: A water supplier shall give a copy of the most recent public notice for any outstanding violation of a MCL, treatment technique requirement, or a violation of a schedule of compliance prescribed pursuant to a variance or exemption to all new billing units or hookups prior to or at the time service begins.
- H. General content of a public notice: Each public notice shall provide a clear and readily understandable explanation of the violation, any potential adverse health effects, the population at risk, the steps that the public water system is taking to correct the violation, the necessity for using alternative water supplies; and any measures the consumer should take to minimize exposure until the violation is corrected. Each public notice shall be conspicuous and free of unduly technical language, small print, editorial comments, or similar problems that frustrate the purposes of the notice. Each public notice shall include the name and telephone number of a person at the public water system who can be contacted for additional information about the notice. Where appropriate, the public notice shall be multi-lingual.
- I. Mandatory health effects language: A water supplier shall include the mandatory health effects language prescribed in Appendix A in a public notice for the violation of a maximum contaminant level or treatment technique and in a public notice regarding the granting or continued existence of a variance or exemption.
- J. The Department shall not provide public notice on behalf of the water supplier. If a water supplier fails to notify the public in accordance with the requirements of this Section, the Department may provide notice to persons served by the public water system by any of the methods listed in this Section or by issuance of a press release. The water supplier remains legally responsible for ensuring that the requirements of this Section are met.

Historical Note

Former Section R9-20-507 repealed, new Section R9-20-507 adopted effective November 1, 1979 (Supp. 79-6). Former Section R9-20-507 amended, renumbered as Section R9-20-505, then renumbered as Section R18-4-105 effective October 23, 1987 (Supp. 87-4). R18-4-105 recodified to R18-5-105 (Supp. 95-2). New Section adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3).

R18-4-106. Use of Approved Analytical Methods

A. A person sampling to determine compliance with a MCL, treatment technique, or a monitoring requirement prescribed in this Chapter shall ensure that the sample is analyzed in accordance with an analytical method that is approved for drinking water by EPA, and by ADHS under R9-14-610.

B. An alternative analytical method to determine compliance with a MCL, treatment technique, or monitoring requirement prescribed in this Chapter may be employed if the alternative analytical method is approved by the Director of ADHS under R9-14-610(B) with the concurrence of the Administrator of EPA.

Historical Note

Adopted effective March 19, 1980 (Supp. 80-2). Former Section R9-20-508 amended, renumbered as Section R9-20-506, then renumbered as Section R18-4-106 effective October 23, 1987 (Supp. 87-4). Amended subsection (F) effective November 30, 1988 (Supp. 88-4). R18-4-106 recodified to R18-5-106 (Supp. 95-2). New Section adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-107. Use of Licensed Laboratories

Analytical results from a sample taken by a public water system shall be valid only if the sample has been analyzed by a laboratory that is licensed to perform such analysis by the Arizona Department of Health Services, except that field measurements of turbidity, disinfectant residual, temperature, pH, conductivity, alkalinity, calcium hardness [as CaCO₃], orthophosphates and silica may be performed by an operator, employee, agent or other representative of a public water system.

Historical Note

Former Section R9-20-509 repealed, new Section R9-20-509 adopted effective November 1, 1979 (Supp. 79-6). Former Section R9-20-509 amended, renumbered as Section R9-20-507, then renumbered as Section R18-4-107 effective October 23, 1987 (Supp. 87-4). Amended subsection (B) effective November 30, 1988 (Supp. 88-4). R18-4-107 recodified to R18-5-107 (Supp. 95-2). New Section adopted effective April 28, 1995 (Supp. 95-2).

R18-4-108. Sample Collection, Preservation, and Transportation

A public water system shall collect each sample using the sample preservation, container, and maximum holding time procedure prescribed by ADHS and approved by EPA for the analytical method used.

Historical Note

Former Section R9-20-510 repealed, new Section R9-20-510 adopted effective November 1, 1979 (Supp. 79-6). Former Section R9-20-510 amended, renumbered as Section R9-20-508, then renumbered as Section R18-4-108 effective October 23, 1987 (Supp. 87-4). Amended subsection (D) effective November 30, 1988 (Supp. 88-4). R18-4-108 recodified to R18-5-108 (Supp. 95-2). New Section R18-4-108 renumbered from R18-4-109 and amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-109. Alternate Variances

A. The Department may grant an alternate variance from compliance with a MCL or treatment technique requirement to a public water system. When making a decision whether to grant or deny an alternate variance, the Department shall consider whether:

1. The public water system serves fewer than 10,000 persons, including the number of persons served through a consecutive system;
2. The MCL or treatment technique requirement for which the alternate variance is sought was promulgated on or after January 1, 1986;
3. The public water system will install and use an alternate variance technology published by EPA under 42 U.S.C. 300g-1(b)(15) (2001);
4. The public water system establishes, by submission of the information required of new systems under Appendices C and D of Article 6, that it cannot afford to comply with the MCL or treatment technique requirement for which the alternate variance is sought by use of one of the following:
 - a. Installing treatment;
 - b. Use of an alternative source of water supply; or

- c. Restructuring or consolidation changes, including ownership change and physical consolidation with another public water system, or both.
- 5. The public water system is not able to obtain financial assistance under 42 U.S.C. 300j-12 (2001) or any other federal or state program;
- 6. The public water system submits documentation that it meets the source water quality requirements for installing the alternate variance technology; and
- 7. The public water system submits documentation demonstrating that it is financially and technically capable of installing, operating, and maintaining the alternate variance technology.
- B. The Department shall only grant an alternate variance for a MCL that was revised after January 1, 1986 up to the MCL in effect before January 1, 1986.
- C. The Department shall not grant an alternate variance for a microbiological contaminant, including a bacterium, virus, or other organism, or an indicator or treatment technique for a microbial contaminant.
- D. A public water system that serves fewer than 10,000 persons shall submit a written request for an alternate variance to the Department. The request shall include all items listed in R18-4-110(D) and documentation that the public water system can pay for and maintain the installation and operation of the alternate variance technology.
- E. The Department shall review the alternate variance request, make a preliminary decision on the request, and schedule a public hearing for customers of the public water system to comment on the proposed alternate variance.
- F. The Department shall conduct public hearings on a proposed alternate variance according to the general public hearing procedures prescribed in R18-1-402.
- G. The Department shall not grant an alternate variance until the later of the following:
 - 1. 90 days after the Department proposes to grant the alternate variance;
 - 2. For a public water system that serves 3,300 or fewer persons, the date that the Department makes the modifications recommended by EPA or responds in writing to each objection made by EPA, if any; or
 - 3. For a public water system that serves more than 3,300 and fewer than 10,000 persons, the date EPA approves the alternate variance.
- H. The Department shall publish a final decision to grant an alternate variance in the Arizona Administrative Register.

Historical Note

Former Section R9-20-511 repealed, new Section R9-20-511 adopted effective November 1, 1979 (Supp. 79-6). Former Section R9-20-511 amended, renumbered as Section R9-20-509, then renumbered as Section R18-4-109 effective October 23, 1987 (Supp. 87-4). R18-4-109 recodified to R18-5-109 (Supp. 95-2). New Section adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Former Section R18-4-109 renumbered to R18-4-108; new Section R18-4-109 made by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-110. Variances

- A. The Department may grant a variance to a public water system from compliance with a MCL, except for total coliform, nitrate, or nitrite, if the public water system demonstrates to the Department all of the following:
 - 1. The public water system cannot comply with a MCL because of the characteristics of the sources reasonably available to the public water system;
 - 2. The public water system cannot join with another public water system or develop another source that will result in compliance with the MCL;
 - 3. The public water system will install and use or has installed and uses best available technology in an attempt to achieve compliance with the MCL, except that if a public water system can demonstrate through a comprehensive engineering assessment of the public water system that installation and use of best available technology will achieve only a de minimis reduction in the contaminant level, the Department may grant a variance conditioned upon the issuance of a schedule of compliance that requires the public water system to examine other treatment methods to achieve compliance with the MCL. If the Department determines that another treatment method is technically feasible, the Department may require the public water system to install and use that treatment method under a schedule of compliance; and
 - 4. The granting of a variance will not result in an unreasonable risk to the health of persons served by the public water system.
- B. The Department may grant a variance to a public water system from a treatment technique requirement upon a finding that the public water system applying for the variance has demonstrated that the treatment technique is not necessary to protect the health of persons because of the nature of the source for the public water system. The Department shall not grant a variance to a public water system from treatment technique requirements related to disinfection and filtration.
- C. The Department shall, as a condition of a variance, prescribe a schedule of compliance to a public water system when a variance is granted. The schedule of compliance shall include interim control measures deemed necessary by the Department and dates for their implementation. A schedule of compliance shall require compliance with the MCL for which the variance is granted as quickly as practicable, but no later than five years after the date the variance is issued. The Department may extend the final date of compliance after providing a public notice and an opportunity for a general public hearing.

D. A public water system shall submit a written request to the Department for a variance. The request shall include the following:

1. Identification of the contaminant and the MCL or treatment technique requirement for which a variance is requested;
2. Explanation of the economic and legal factors relevant to the system's ability to comply;
3. Analytical results of samples taken from water entering the distribution system after treatment and source water;
4. A description of the best available treatment technology, treatment technique, or other means that has been or will be installed and used in an attempt to comply with the MCL;
5. A proposed compliance schedule, including interim control measures and the dates that each interim control measure will be implemented. The proposed compliance schedule shall include as a minimum the following dates:
 - a. The date by which the public water system will arrange for an alternative source or the existing source will be improved,
 - b. The date of initiation of the connection of the alternative source or the improvement of the existing source, and
 - c. The date by which final compliance with the MCL or treatment technique requirement is to be achieved.
6. A contingency plan for the provision of safe drinking water if there is an increase in the concentration of the contaminant for which the variance is requested to prevent an unreasonable risk to public health; and
7. A statement that the public water system will perform monitoring or other reasonable requirements prescribed by the Department as a condition of the variance.

E. The Department shall consider the following factors when reviewing a request for a variance because a public water system is unable to comply with a MCL:

1. The availability and effectiveness of treatment methods for the contaminant for which the variance is requested; and
2. The cost and other economic considerations such as implementing treatment, improving the quality of the source, or using an alternative source.

F. The Department shall consider the following factors when reviewing a request for a variance from a treatment technique requirement because the treatment is unnecessary to protect the public health:

1. The quality of the source, including water quality data and pertinent sources of pollution; and
2. Source protection measures employed by the public water system.

G. The Department shall provide written notice to the applicant of a preliminary decision to grant or deny a variance within 90 days after receipt of a request. If the preliminary decision is to grant the variance, the notice shall identify the contaminant for which the variance is granted, specify the term of the variance, and include a proposed schedule of compliance. A public water system shall provide public notice of the preliminary decision to grant the variance to persons served by the public water system as required in R18-4-105. If the preliminary decision is to deny the variance, the notice of intent to deny the variance shall state the reasons for the proposed denial. The applicant may submit additional information to the Department within 30 days after receipt of the notice of intent to deny the variance. The Department shall make a final decision, in writing, and notify the applicant within 30 days after receipt of any additional information. If no additional information is submitted to the Department within 30 days, the Department shall deny the variance.

H. The Department shall provide notice and an opportunity for a public hearing on a proposed variance according to the procedures prescribed in R18-1-401. The public notice may cover one or more variance requests. Any person who is served by the public water system and who may be adversely affected by the proposed variance may request a public hearing. The Department may issue a public notice and hold a public hearing on a proposed variance on its own initiative.

1. A request for a public hearing shall be submitted to the Department within 30 days after publication of the notice of opportunity for a public hearing.

2. A request for a hearing shall include the name, address, and signature of the person requesting the hearing and a brief jurisdictional statement that describes how the person will be adversely affected by the proposed variance.

I. The Department shall conduct a public hearing on a proposed variance according to the general public hearing procedures prescribed at R18-1-402.

J. The Department may require a public water system to use bottled water, point-of-use treatment devices, point-of-entry treatment devices, or other means as a condition of granting a variance from a MCL to avoid an unreasonable risk to health.

Historical Note

Former Section R9-20-512 repealed, new Section R9-20-512 adopted effective November 1, 1979 (Supp. 79-6). Former Section R9-20-512 amended, renumbered as Section R9-20-510, then renumbered as Section R18-4-110 effective October 23, 1987 (Supp. 87-4). Amended subsection (B) effective November 30, 1988 (Supp. 88-4). R18-4-110 recodified to R18-5-110 (Supp. 95-2). New Section adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-111. Exemptions

A. The Department may grant an exemption to a public water system from a MCL (except for total coliform, nitrate, or nitrite) or a treatment technique requirement if the public water system demonstrates to the Department that:

1. The public water system is unable to comply with a MCL or treatment technique requirement because of compelling factors (which may include economic factors);
2. The grant of an exemption will not result in an unreasonable risk to public health;
3. The public water system is either:
 - a. An existing public water system that is in operation on the effective date of the MCL or treatment technique requirement; or
 - b. A new public water system that begins operation after the effective date of the MCL or treatment technique requirement, and does not have a reasonably available, alternative source that can be used to achieve compliance with the MCL or treatment technique requirement;
4. The public water system is unable to make management or restructuring changes that will result in compliance with the MCL or treatment technique requirement, or improve the quality of the drinking water; and
5. The public water system is taking all practicable steps to meet the MCL or treatment technique requirement, and:
 - a. The public water system cannot meet the MCL or treatment technique requirement without capital improvements that cannot be completed before the effective date of the MCL or treatment technique requirement;
 - b. If the public water system needs financial assistance for necessary capital improvements, the public water system has entered into an agreement to obtain the financial assistance; or
 - c. The public water system has entered into an enforceable agreement to become part of a regional public water system.
- B. When an exemption is granted, the Department shall prescribe to the public water system a schedule for compliance through the installation of treatment or the development of an alternate source. The schedule for compliance shall include the interim control measures that the Department deems necessary and dates for their implementation.
- C. The Department shall require in the schedule of compliance that a public water system comply with a MCL or treatment technique requirement as quickly as practicable, but within three years after the effective date of the MCL or treatment technique requirement. The Department may renew an exemption biennially for a period not to exceed six additional years for a public water system serving 3300 or fewer persons that cannot come into compliance within three years after the effective date of the MCL or treatment technique requirement due solely to needing financial assistance for necessary capital improvements. A public water system requesting a biennial extension must demonstrate compliance with the schedule for compliance in subsection (B).
- D. The Department shall not grant an exemption to a public water system from a treatment technique requirement related to disinfection or filtration.
- E. A public water system shall submit a written request to the Department for an exemption. The request shall include the following:
 1. Identification of the contaminant and the MCL or treatment technique requirement for which an exemption is requested,
 2. Analytical results of samples taken of both water entering the distribution system after treatment and source water, and
 3. An explanation of the compelling factors that prevent the public water system from achieving compliance with the MCL or treatment technique requirement.
- F. The Department shall consider the following when determining whether a public water system is unable to comply because of compelling factors:
 1. The necessary construction, installation, or modification of treatment equipment or systems required;
 2. The time required to place a new treatment facility into operation to replace the existing facility that is not in compliance;
 3. The economic feasibility of compliance;
 4. The availability of alternative sources of water; and
 5. Opportunities for consolidation with another public water system.
- G. The Department shall provide written notice to the applicant of a preliminary decision to grant or deny an exemption within 90 days after receipt of a request. If the preliminary decision is to grant an exemption, the notice shall identify the MCL or treatment technique requirement for which the exemption is granted, the term of the exemption, and include a proposed schedule of compliance. A public water system shall provide public notice of the preliminary decision to grant the exemption to persons served by the public water system as required in R18-4-105. If the preliminary decision is to deny the exemption, the notice of intent to deny the exemption shall state the reasons for the proposed denial. The applicant may submit additional information to the Department within 30 days after receipt of the notice of intent to deny the exemption. The Department shall make a final decision, in writing, and notify the applicant within 30 days after receipt of any additional information. If no additional information is submitted to the Department within 30 days, the Department shall deny the exemption.
- H. The Department shall provide notice and an opportunity for a public hearing on a proposed exemption according to the procedures prescribed in R18-1-401. The public notice may cover one or more exemption requests. Any person who is served by the public water system and who may be adversely affected by the proposed exemption may request a public hearing. The Department may issue a public notice and hold a public hearing on a proposed exemption on its own initiative.
 1. A request for a public hearing shall be submitted to the Department within 30 days after publication of the notice of opportunity for a public hearing.
 2. A request for a hearing shall include the name, address, and signature of the person requesting the hearing and a brief jurisdictional statement that describes how the person will be adversely affected by the proposed exemption.

I. The Department shall conduct a public hearing on a proposed exemption according to the general public hearing procedures prescribed at R18-1-402.

J. The Department may require a public water system to use bottled water, a point-of-use treatment device, a point-of-entry treatment device, or other means as a condition of granting an exemption from a MCL requirement to avoid an unreasonable risk to health. The Department may require a public water system to use bottled water, a point-of-use treatment device, or other means as a condition of granting an exemption from a corrosion control treatment requirement for lead and copper to avoid an unreasonable risk to health. The Department may require a public water system to use a point-of-entry treatment device as a condition of granting an exemption from the source water treatment or the lead service line replacement requirements, or both, for lead or copper to avoid an unreasonable risk to health. If the Department requires the use of a point-of-entry treatment device as a condition of granting an exemption from the source water treatment or the lead service line replacement requirements, or both, for lead or copper, the public water system shall ensure that use of the treatment device will not cause increased corrosion of lead- or copper-bearing materials located between the device and the tap that could increase contaminant levels at the tap.

K. A public water system shall not receive an exemption under this Section if the public water system has been granted an alternate variance under R18-4-109.

Historical Note

Adopted as Section R9-20-511 and renumbered as Section R18-4-111 effective October 23, 1987 (Supp. 87-4). R18-4-111 recodified to R18-5-111 (Supp. 95-2). New Section adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-112. Exclusions

A. A water supplier may request an exclusion from any requirement contained in this Chapter if such requirement is not also a requirement contained in a National Primary Drinking Water Regulation. The Department shall consider the application of a water supplier for an exclusion from compliance with portions of this Chapter if it can be satisfactorily demonstrated that:

1. The request is not for a requirement which meets the qualifications to be addressed by a variance or exemption;
2. The request is not for requirements relating to turbidity, nitrate, or microbiological contaminants; and
3. The exclusion will not result in unreasonable risk to public health.

B. An application for an exclusion shall contain the following information:

1. The nature and duration of the exclusion requested,
2. Analytical results of water quality sampling of the water system including tests conducted as required by this Chapter,
3. An explanation and submittal of evidence that the exclusion will not result in an unreasonable risk to public health, and
4. Other information that the applicant believes to be pertinent or that the Department requires.

C. The Department shall take the following action on the application:

1. If the Department grants the request for an exclusion, it shall notify the applicant of that decision in writing within 90 days of receipt of the application. Such notice shall identify the facility covered, the conditions and requirements of the exclusion, including control measures, and that the exclusion may be terminated upon a finding that the water system has failed to comply with any conditions or requirements of the exclusion.
2. If the Department determines that an exclusion is not justified, it shall notify the applicant of the intention of denial within 90 days of receipt of the application, indicating the reasons for the proposed denial, and shall offer the applicant an opportunity to submit additional information to the Department within 30 days of the notice of intention to deny application. The Department shall make a final determination and notify the applicant within 30 days after receiving such additional information. If no additional information is submitted, the application shall be denied.

D. In addition to reviewing a request submitted by a water supplier, the Department may, on its own initiative, grant exclusions to water systems, either individually or on a group basis, provided that the exclusions meet criteria prescribed in subsection (A) of this Section.

Historical Note

Former Section R9-20-517 repealed, new Section R9-20-517 adopted effective November 1, 1979 (Supp. 79-6). Amended effective March 19, 1980 (Supp. 80-2). Former Section R9-20-517 amended, renumbered as Section R9-20-512, then renumbered as Section R18-4-112 effective October 23, 1987 (Supp. 87-4). R18-4-112 recodified to R18-5-112 (Supp. 95-2). New Section adopted effective April 28, 1995 (Supp. 95-2).

R18-4-113. Consecutive Public Water Systems

When a public water system obtains all of its water from another public water system that is regulated by the Department, the Department may modify the monitoring requirements imposed by this Chapter to the extent that the interconnection of the public water systems justifies treating them as a single public water system for monitoring purposes. Any modified monitoring by a public water system shall be conducted according to a written monitoring schedule prescribed by the Department and approved by the U.S. Environmental Protection Agency.

Historical Note

Adopted as Section R9-20-513 and renumbered as Section R18-4-113 effective October 23, 1987 (Supp. 87-4). Amended subsections (A) and (C) effective November 30, 1988 (Supp. 88-4). R18-4-113 recodified to R18-5-113 (Supp. 95-2). New Section adopted effective April 28, 1995 (Supp. 95-2).

R18-4-114. Certified Operators

A water supplier of a public water system shall provide for a certified operator who is properly certified pursuant to 18 A.A.C. 5, Article 1 to operate each water treatment plant in the system and the distribution system. The same certified operator may be in direct responsible charge of 1 or more water treatment plants and the distribution system provided the operator holds an operator certificate of the proper type and grade for each facility. Separate operator certificates are required to operate a water treatment plant and a distribution system.

Historical Note

Former Section R9-20-519 repealed, new Section R9-20-519 adopted effective November 1, 1979 (Supp. 79-6). Former Section R9-20-519 amended, renumbered as Section R9-20-514, then renumbered as Section R18-4-114 effective October 23, 1987 (Supp. 87-4). R18-4-114 recodified to R18-5-114 (Supp. 95-2). New Section adopted effective April 28, 1995 (Supp. 95-2).

R18-4-115. Backflow Prevention

A. A public water system shall protect its system from contamination caused by backflow through unprotected cross-connections by requiring the installation and periodic testing of backflow-prevention assemblies. Required backflow-prevention assemblies shall be installed as close as practicable to the service connection.

B. A public water system shall ensure that a backflow-prevention assembly is installed whenever any of the following occur:

1. A substance harmful to human health is handled in a manner that could permit its entry into the public water system. These substances include chemicals, chemical or biological process waters, water from public water supplies that has deteriorated in sanitary quality, and water that has entered a fire sprinkler system. A Class 1 or Class 2 fire sprinkler system is exempt from the requirements of this Section;
2. A source of water supply exists on the user's premises that is not accepted as an additional source by the public water system or is not approved by the Department;
3. An unprotected cross-connection exists or a cross-connection problem has previously occurred within a user's premises; or
4. There is a significant possibility that a cross-connection problem will occur and entry to the premises is restricted to the extent that cross-connection inspections cannot be made with sufficient frequency or on sufficiently short notice to assure that unprotected cross-connections do not exist.

C. Unless a cross-connection problem is specifically identified, or as otherwise provided in this Section, the requirements of this Section shall not apply to single family residences used solely for residential purposes.

D. A backflow-prevention assembly required by this Section shall comply with the following:

1. If equipped with test cocks, it shall have been issued a certificate of approval by:
 - a. The University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC-FCCCHR), or
 - b. A third-party certifying entity that is unrelated to the product's manufacturer or vendor, and is approved by the Department.
2. If not equipped with test cocks, it shall be approved by a third-party certifying entity that is unrelated to the product's manufacturer or vendor and is approved by the Department.

E. The minimum level of backflow protection that is provided to protect a public water system shall be the level recommended in Section 7.2 of the Manual of Cross-Connection Control, Ninth Edition, USC-FCCCHR, KAP-200 University Park MC-2531, Los Angeles, California, 90089-2531, December 1993, (and no future editions or amendments), incorporated by reference and on file with the Department and the Office of the Secretary of State. The types of backflow prevention that may be required, listed in decreasing order according to the level of protection they provide, include: an air-gap separation (AG), a reduced pressure principle backflow prevention (RP) assembly, a pressure vacuum breaker (PVB) assembly, and a double check valve (DC) assembly. Nothing contained in this Section shall prevent the public water system from requiring the use of a higher level of protection than that required by this subsection.

1. A public water system may make installation of a required backflow-prevention assembly a condition of service. A user's failure to comply with this requirement shall be sufficient cause for the public water system to terminate water service.

2. Specific installation requirements for backflow prevention include the following:

- a. Any backflow prevention required by this Section shall be installed in accordance with the manufacturer's specifications.
- b. For an AG installation, all piping between the user's connection and the receiving tank shall be entirely visible unless otherwise approved in writing by the public water system.
- c. An RP assembly shall not be installed in a meter box, pit, or vault unless adequate drainage is provided.
- d. A PVB assembly may be installed for use on a landscape water irrigation system if the irrigation system conforms to all of the criteria listed below. An RP assembly is required whenever any of the criteria are not met.
- i. The water use beyond the assembly is for irrigation purposes only;

- ii. The PVB is installed in accordance with the manufacturer's specifications;
 - iii. The irrigation system is designed and constructed to be incapable of inducing backpressure; and
 - iv. Chemigation, the injection of chemical pesticides and fertilizers, is not used or provided in the irrigation system.
- F. Each backflow-prevention assembly required by this Section shall be tested at least annually, or more frequently if directed by the public water system or the Department. Each assembly shall also be tested after installation, relocation, or repair. An assembly shall not be placed in service unless it has been tested and is functioning as designed. The following provisions shall apply to the testing of backflow-prevention assemblies:
- 1. Testing shall be in accordance with procedures described in Section 9 of the Manual of Cross-Connection Control. The public water system shall notify the water user when testing of backflow-prevention assemblies is needed. The notice shall specify the date by which the testing must be completed and the results forwarded to the public water system.
 - 2. Testing shall be performed by a person who is currently certified as a "general" tester by the California-Nevada Section of the American Water Works Association (CA-NV Section, AWWA), the Arizona State Environmental Technical Training (ASETT) Center, or other certifying authority approved by the Department.
 - 3. When a backflow-prevention assembly is tested and found to be defective, it shall be repaired or replaced in accordance with the provisions of this Section.
- G. A public water system shall maintain records of backflow-prevention assembly installations and tests performed on backflow-prevention assemblies in its service area. Records shall be retained by the public water system for at least three years and shall be made available for review by the Department upon request. These records shall include an inventory of backflow-prevention assemblies required by this Section and, for each assembly, all of the following information:
- 1. Assembly identification number and description,
 - 2. Location,
 - 3. Date of tests,
 - 4. Description of repairs and recommendations for repairs made by the tester, and
 - 5. The tester's name and certificate number.
- H. A public water system shall submit a written cross-connection incident report to the Department and the local health authority within five business days after a cross-connection problem occurs that results in contamination of the public water system. The report shall address all of the following:
- 1. Date and time of discovery of the unprotected cross-connection,
 - 2. Nature of the cross-connection problem,
 - 3. Affected area,
 - 4. Cause of the cross-connection problem,
 - 5. Public health impact,
 - 6. Date and text of any public health advisory issued,
 - 7. Each corrective action taken, and
 - 8. Date of completion of each corrective action.
- I. An individual with direct responsibility for implementing a backflow prevention program for a water system serving more than 50,000 persons, or if the Department has determined that such a need exists, shall be licensed as a "cross-connection control program specialist" by the CA-NV Section, AWWA, the ASETT Center, or other certifying authority approved by the Department.

Historical Note

Former Section R9-20-520 repealed, new Section R9-20-520 adopted effective November 1, 1979 (Supp. 79-6). Former Section R9-20-520 amended, renumbered as Section R9-20-515, then renumbered as Section R18-4-115 effective October 23, 1987 (Supp. 87-4). R18-4-115 recodified to R18-5-115 (Supp. 95-2). New Section adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-116. Emergency Operation Plans

- A. The water supplier for a community water system shall develop and keep an emergency operations plan in an easily accessible location. At a minimum, the emergency operations plan shall detail the steps that the community water system will take to assure continuation of service in the following emergency situations:
- 1. Loss of a source;
 - 2. Loss of water supply due to major component failure;
 - 3. Damage to power supply equipment or loss of power;
 - 4. Contamination of water in the distribution system from backflow;
 - 5. Collapse of a reservoir, reservoir roof, or pumphouse structure;
 - 6. A break in a transmission or distribution line; and
 - 7. Chemical or microbiological contamination of the water supply.
- B. The emergency operations plan required by subsection (A) shall address all of the following:

1. Provision of alternate sources of water during the emergency;
2. Notice procedures for regulatory agencies, news media, and users;
3. Disinfection and testing of the distribution system once service is restored;
4. Identification of critical system components that shall remain in service or be returned to service quickly;
5. Critical spare parts inventory; and
6. Staff training in emergency response procedures.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3).

R18-4-117. Unsafe Supplies

The Department may order a public water system to disconnect a source to protect the public health from an acute health risk that is attributable to the source. An acute health risk is posed when 1 of the following occurs:

1. A violation of a MCL for total coliform and fecal coliform or E. coli are present that is attributable to the source,
2. A violation of the MCL for nitrate or nitrite that is attributable to the source, or
3. An occurrence of a waterborne disease outbreak that is attributable to the source.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3).

R18-4-118. Sanitary Surveys

A. Each public water system shall undergo a sanitary survey. A sanitary survey shall be conducted on a scheduled basis, when the Department determines that a public water system is not in compliance with this Chapter or when the Department determines that a public water system poses a threat to public health because of defective design, lack of treatment, inadequacy of the source, poor maintenance, inadequate records, ineffective operation, or that the water is unsatisfactory for use. A water supplier shall make necessary alteration or additions in the design or construction of equipment and such changes in the operation of the public water system as necessary to comply with requirements of this Chapter and within the time limits set by the Department.

B. A community water system which collects fewer than 5 routine microbiological samples per month shall undergo an initial sanitary survey by June 29, 1994. A noncommunity water system which collects fewer than 5 routine microbiological samples per month shall undergo an initial sanitary survey by June 29, 1999. Thereafter, these systems shall undergo another sanitary survey every 5 years, except that noncommunity water systems using only protected and disinfected groundwater shall undergo subsequent sanitary surveys at intervals not to exceed 10 years. The Department shall review the results of each sanitary survey to determine whether existing monitoring frequency is adequate and what additional measures, if any, the public water system needs to undertake to improve drinking water quality.

C. In conducting a sanitary survey of a groundwater system, information on sources of contamination within a delineated wellhead protection area shall be considered instead of collecting new information provided the information was collected since the last time the system was subject to a sanitary survey.

D. A sanitary survey of a public water system shall be made by a representative of the Department or a professional engineer or sanitarian who is registered in Arizona and approved by the Department.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2).

R18-4-119. Standards for Additives, Materials, and Equipment

A. Each product added directly to water during production or treatment shall conform to ANSI/NSF Standard 60. Products covered by this subsection include but are not limited to:

1. Coagulation and flocculation chemicals;
2. Chemicals for corrosion and scale control;
3. Chemicals for softening, precipitation, sequestering, and pH adjustment;
4. Disinfection and oxidation chemicals;
5. Chemicals for fluoridation, defluoridation, algae control, and dechlorination;
6. Dyes and tracers;
7. Antifreezes, antifoamers, regenerants, and separation process scale inhibitors and cleaners; and
8. Water well drilling and rehabilitation aids.

B. Except as identified in subsections (D) and (E), a material or product installed after January 1, 1993, that comes into contact with water or a water treatment chemical shall conform to ANSI/NSF Standard 61. Products and materials covered by this subsection include but are not limited to:

1. Process media, such as carbon and sand;

2. Joining and sealing materials, such as solvents, cements, welding materials, and gaskets;
 3. Lubricants;
 4. Pipes and related products, such as tanks and fittings;
 5. Mechanical devices used in treatment, transmission, or distribution systems such as valves, chlorinators, and separation membranes; and
 6. Surface coatings and paints.
- C. Evidence that a product conforms to the requirements of this Section shall be the appearance on the product or product package of a seal of a certifying entity that is accredited by the American National Standards Institute to provide the certification.
- D. The Director shall consider standards for chemicals, materials, or equipment that [have] been certified by . . . [NSF International] as complying with the standards required by this Section. In those instances where chemicals, materials, and equipment that come into contact with drinking water are essential to the design, construction, or operation of the drinking water system and have not been certified by . . . [NSF International] or have . . . [NSF International] certification but are not available from more than one source, the standards shall provide for the use of alternatives which include:
1. Products composed entirely of ingredients determined by the Environmental Protection Agency, the Food and Drug Administration, or other federal agencies as appropriate for addition to potable water or aqueous food.
 2. Products composed entirely of ingredients listed in the National Academy of Sciences "Water Chemicals Codex."
 3. Products consistent with the specifications of the American Water Works Association.
 4. Products that are designed for use in drinking water systems and that are consistent with the specifications of the American Society for Testing and Materials.
 5. Products that are historically used or in use in drinking water systems consistent with standard practice and that have not been demonstrated during past applications in the United States to contribute to water contamination. A.R.S. § 49-353.01(B)
- E. The Department exempts the following materials and products from the requirement to conform to ANSI/NSF Standard 61:
1. A concrete structure, tank, or treatment tank basin constructed onsite that is not normally coated or sealed if the construction materials used in the concrete are consistent with subsection (D). If a coating or sealant is specified by the design engineer, the coating or sealant shall comply with ANSI/NSF Standard 61;
 2. An earthen reservoir or canal located upstream of water treatment;
 3. A water treatment plant that is comprised of components that comply with subsections (B), (C), and (D);
 4. A synthetic tank constructed of material that meets Food and Drug Administration standards for a material that comes into contact with drinking water or aqueous food, or a galvanized steel tank, either of which is:
 - a. Less than 15,000 gallons in capacity, and
 - b. Used in a public water system with 500 or fewer service connections; or
 5. A pipe, treatment plant component, or water distribution system component made of lead-free stainless steel.

Historical Note

Former Section R18-4-215 renumbered R18-4-119 pursuant to R1-1-404 effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-120. Monitoring and Sampling by the Department

- A. The Department may take samples from a public water system. If the Department takes a sample at a public water system, the Department shall forward a copy of the analytical results to the water supplier.
- B. If a public water system fails to monitor, the Department may monitor to determine compliance with MCLs. A public water system shall not use Department monitoring to satisfy monitoring requirements prescribed by this Chapter. This subsection does not apply to monitoring under the monitoring assistance program.
- C. A contractor shall take compliance samples for the categories of contaminants listed in A.R.S. § 49-360(A)(1) - (3) for a public water system that participates in the monitoring assistance program.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective December 8, 1998 (Supp. 98-4).

R18-4-121. Enforcement

- A. A water supplier who constructs, operates, or maintains a public water system contrary to the provisions of this Chapter or fails to maintain the quality of water within the public water system as required by this Chapter is subject to the actions provided in A.R.S. § 49-142 and § 49-354.
- B. If the Department determines that a public water system is not in compliance with any of the provisions of this Chapter, the Department may issue an order to the water supplier that requires the public water system to make no further service connections or that limits the number of service connections until the Department determines that the public water system achieves compliance.

- C. The Department may determine compliance or initiate enforcement action based upon analytical results and other information compiled by the Department or other federal, state, or local agencies.
- D. The Department shall round compliance data to the same number of significant figures as the MCL in question to determine compliance with the MCL.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3).

R18-4-122. Entry and Inspection of Public Water Systems

A Department inspection shall comply with A.R.S. § 41-1009.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective December 8, 1998 (Supp. 98-4). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-Appendix A. Mandatory Health Effects Language

(1) Acrylamide. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that acrylamide is a health concern at certain levels of exposure. Polymers made from acrylamide are sometimes used to treat water supplies to remove particulate contaminants. Acrylamide has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. Sufficiently large doses of acrylamide are known to cause neurological injury. EPA has set the drinking water standard for acrylamide using a treatment technique to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. This treatment technique limits the amount of acrylamide in the polymer and the amount of the polymer which may be added to drinking water to remove particulates. Drinking water systems which comply with this treatment technique have little to no risk and are considered safe with respect to acrylamide.

(2) Alachlor. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that alachlor is a health concern at certain levels of exposure. This organic chemical is a widely used pesticide. When soil and climatic conditions are favorable, alachlor may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for alachlor at 0.002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals.

Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to alachlor.

(3) Antimony. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that antimony is a health concern at certain levels of exposure. This inorganic chemical occurs naturally in soils, groundwater and surface waters and is often used in the flame retardant industry. It is also used in ceramics, glass, batteries, fireworks, and explosives. It may get into drinking water through natural weathering of rock, industrial production, municipal waste disposal, or manufacturing processes. This chemical has been shown to decrease longevity, and alter blood levels of cholesterol and glucose in laboratory animals such as rats exposed to high levels during their lifetimes. EPA has set the drinking water standard for antimony at 0.006 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to antimony.

(4) Asbestos. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that asbestos fibers greater than 10 micrometers in length are a health concern at certain levels of exposure. Asbestos is a naturally occurring mineral. Most asbestos fibers in drinking water are less than 10 micrometers in length and occur in drinking water from natural sources and from corroded asbestos-cement pipes in the distribution system. The major uses of asbestos were in the production of cements, floor tiles, paper products, paint, and caulking; in transportation-related applications; and in the production of textiles and plastics. Asbestos was once a popular insulating and fire-retardant material. Inhalation studies have shown that various forms of asbestos have produced lung tumors in laboratory animals. The available information on the risk of developing gastrointestinal tract cancer associated with the ingestion of asbestos from drinking water is limited. Ingestion of intermediate-range chrysotile asbestos fibers greater than 10 micrometers in length is associated with causing benign tumors in male rats. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for asbestos at 7 million long fibers per liter to reduce the potential risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to asbestos.

(5) Atrazine. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that atrazine is a health concern at certain levels of exposure. This organic chemical is a herbicide. When soil and climatic conditions are favorable, atrazine may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical

has been shown to affect offspring of rats and the heart of dogs. EPA has set the drinking water standard for atrazine at 0.003 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to atrazine.

(6) Barium. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that barium is a health concern at certain levels of exposure. This inorganic chemical occurs naturally in some aquifers that serve as sources of groundwater. It is also used in oil and gas drilling muds, automotive paints, bricks, tiles, and jet fuels. It generally gets into drinking water after dissolving from naturally occurring minerals in the ground. This chemical may damage the heart and cardiovascular system and is associated with high blood pressure in laboratory animals such as rats exposed to high levels during their lifetimes. In humans, EPA believes that effects from barium on blood pressure should not occur below 2 parts per million (ppm) in drinking water. EPA has set the drinking water standard for barium at 2 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to barium.

(7) Benzene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that the benzene is a health concern at certain levels of exposure. This chemical is used as a solvent and degreaser of metals. It is also a major component of gasoline. Drinking water contamination generally results from leaking underground gasoline and petroleum tanks or improper waste disposal. This chemical has been associated with significantly increased risks of leukemia among certain industrial workers who were exposed to relatively large amounts of this chemical during their working careers. This chemical has also been shown to cause cancer in laboratory animals when the animals are exposed at high levels over their lifetimes. Chemicals that cause increased risk of cancer among exposed industrial workers and in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for benzene at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in humans and laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

(8) Benzo[a]pyrene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that benzo[a]pyrene is a health concern at certain levels of exposure. Cigarette smoke and charbroiled meats are common sources of general exposure. The major source of benzo[a]pyrene in drinking water is the leaching from coal tar lining and sealants in water storage tanks. This chemical has been shown to cause cancer in animals such as rats and mice when the animals are exposed at high levels. EPA has set the drinking water standard for benzo[a]pyrene at 0.0002 parts per million (ppm) to protect against the risk of cancer. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to benzo[a]pyrene.

(9) Beryllium. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that beryllium is a health concern at certain levels of exposure. This inorganic metal occurs naturally in soils, groundwater, and surface waters and is often used in electrical equipment and electrical components. It generally gets into water from runoff from mining operations, discharge from processing plants, and improper waste disposal. Beryllium compounds have been associated with damage to the bones and lungs and induction of cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. There is limited evidence to suggest that beryllium may pose a cancer risk via drinking water exposure. Therefore, EPA based the health assessment on noncancer effects with an extra uncertainty factor to account for possible carcinogenicity. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for beryllium at 0.004 part per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to beryllium.

(10) Cadmium. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that cadmium is a health concern at certain levels of exposure. Food and the smoking of tobacco are common sources of general exposure. This inorganic metal is a contaminant in the metals used to galvanize pipe. It generally gets into water for corrosion of galvanized pipes or by improper waste disposal. This chemical has been shown to damage the kidney in animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the kidney. EPA has set the drinking water standard for cadmium at 0.005 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to cadmium.

(11) Carbofuran. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that carbofuran is a health concern at certain levels of exposure. This organic chemical is a pesticide. When soil and climatic conditions are favorable, carbofuran may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to damage the nervous and reproductive systems of laboratory animals such as rats and mice exposed at high levels over their lifetimes. Some humans who were exposed to relatively large amounts of this chemical during their working careers also suffered damage to the nervous system. Effects on the nervous system are generally rapidly reversible. EPA has set the drinking water standard for carbofuran at 0.04 parts per million (ppm) to protect against the risk of these adverse

health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to carbofuran.

(12) Carbon tetrachloride. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that carbon tetrachloride is a health concern at certain levels of exposure. This chemical was once a popular household cleaning fluid. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for carbon tetrachloride at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

(13) Chlordane. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that chlordane is a health concern at certain levels of exposure. This organic chemical is a pesticide used to control termites. Chlordane is not very mobile in soils. It usually gets into drinking water after application near water supply intakes or wells. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for chlordane at 0.002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to chlordane.

(14) Chromium. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that chromium is a health concern at certain levels of exposure. The inorganic metal occurs naturally in the ground and is often used in the electroplating of metals. It generally gets into water from runoff from old mining operations and improper waste disposal from plating operations. This chemical has been shown to damage the kidney, nervous system, and the circulatory system of laboratory animals such as rats and mice when the animals are exposed at high levels. Some humans who were exposed to high levels of this chemical suffered liver and kidney damage, dermatitis, and respiratory problems. EPA has set the drinking water standard for chromium at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to chromium.

(15) Copper. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that copper is a health concern at certain exposure levels. Copper, a reddish-brown metal, is often used to plumb residential and commercial structures that are connected to water distribution systems. Copper contaminating drinking water as a corrosion by-product occurs as the result of the corrosion of copper pipes that remain in contact with water for a prolonged period of time. Copper is an essential nutrient, but at high doses it has been shown to cause stomach and intestinal distress, liver and kidney damage, and anemia. Persons with Wilson's disease may be at a higher risk of health effects due to copper than the general public. EPA's national primary drinking water regulation requires all public water systems to install optimal corrosion control to minimize copper contamination resulting from the corrosion of plumbing materials. Public water systems serving 50,000 people or fewer that have copper concentrations below 1.3 parts per million (ppm) in more than 90% of tap water samples (the EPA "action level") are not required to install or improve their treatment. Any water system that exceeds the action level must also monitor their source water to determine whether treatment to remove copper in source water is needed.

(16) Cyanide. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that cyanide is a health concern at certain levels of exposure. This inorganic chemical is used in electroplating, steel processing, plastics, synthetic fabrics, and fertilizer products. It usually gets into water as a result of improper waste disposal. This chemical has been shown to damage the spleen, brain, and liver of humans fatally poisoned with cyanide. EPA has set the drinking water standard for cyanide at 0.2 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to cyanide.

(17) 2,4-D. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 2,4-D is a health concern at certain levels of exposure. This organic chemical is used as a herbicide and to control algae in reservoirs. When soil and climatic conditions are favorable, 2,4-D may get into drinking water by runoff into surface water or by leaching into groundwater. The chemical has been shown to damage the liver and kidney of laboratory animals such as rats exposed at high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. EPA has set the drinking water standard for 2,4-D at 0.07 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to 2,4-D.

(18) Dalapon. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that dalapon is a health concern at certain levels of exposure. This organic chemical is a widely used herbicide. It may get into drinking water after application to control grasses in crops, drainage ditches, and along railroads. This chemical has been shown to cause damage to the kidney and liver in laboratory animals when the animals are exposed to high levels over their lifetimes. EPA has set the drinking water standard for dalapon at 0.2 parts per million (ppm) to protect against the risk of these adverse

health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to dalapon.

(19) Dibromochloropropane (DBCP). The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that DBCP is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, dibromochloropropane may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for DBCP at 0.0002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to DBCP.

(20) o-Dichlorobenzene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that o-dichlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a solvent in the production of pesticides and dyes. It generally gets into water by improper waste disposal. This chemical has been shown to damage the liver, kidney, and the blood cells of laboratory animals such as rats and mice exposed to high levels during their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the liver, nervous system, and circulatory system. EPA has set the drinking water standard for o-dichlorobenzene at 0.6 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to o-dichlorobenzene.

(21) Para-dichlorobenzene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that para-dichlorobenzene is a health concern at certain levels of exposure. This chemical is a component of deodorizers, moth balls, and pesticides. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause liver and kidney damage in laboratory animals such as rats and mice when the animals are exposed to high levels over their lifetimes. Chemicals which cause adverse effects in laboratory animals also may cause adverse health effects in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for para-dichlorobenzene at 0.075 parts per million (ppm) to reduce the risk of these adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

(22) 1,2-Dichloroethane. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 1,2-dichloroethane is a health concern at certain levels of exposure. This chemical is used as a cleaning fluid for fats, oils, waxes, and resins. It generally gets into drinking water from improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for 1,2-dichloroethane at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

(23) 1,1-Dichloroethylene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 1,1-dichloroethylene is a health concern at certain levels of exposure. This chemical is used in industry and is found in drinking water as a result of the breakdown of related solvents. The solvents are used as cleaners and degreasers of metals and generally get into drinking water by improper waste disposal. This chemical has been shown to cause liver and kidney damage in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals which cause adverse effects in laboratory animals also may cause adverse health effects in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for 1,1-dichloroethylene at 0.007 parts per million (ppm) to reduce the risk of these adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

(24) cis-1,2-Dichloroethylene. The United States Environmental Protection Agency (EPA) establishes drinking water standards and has determined that cis-1,2-Dichloroethylene is a health concern at certain levels of exposure. This organic chemical is used as a solvent and intermediate in chemical production. It generally gets into water by improper waste disposal. This chemical has been shown to damage the liver, nervous system, and circulatory system of laboratory animals such as rats and mice when exposed at high levels over their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. EPA has set the drinking water standard for cis-1,2-dichloroethylene at 0.07 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to cis-1,2-dichloroethylene.

(25) trans-1,2-Dichloroethylene. The United States Environmental Protection Agency (EPA) establishes drinking water standards and has determined that trans-1,2-dichloroethylene is a health concern at certain levels of exposure. This organic chemical is used as a solvent and intermediate in chemical production. It generally gets into water by improper waste disposal. This chemical has been shown to damage the liver, nervous system, and the circulatory system of laboratory animals such as rats and mice

when exposed at high levels over their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. EPA has set drinking water standard for trans-1,2-dichloroethylene at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to trans-1,2-dichloroethylene.

(26) Dichloromethane. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that dichloromethane (methylene chloride) is a health concern at certain levels of exposure. This organic chemical is a widely used solvent. It is used in the manufacture of paint remover, as a metal degreaser, and as an aerosol propellant. It generally gets into drinking water after improper discharge of waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for dichloromethane at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe with respect to dichloromethane.

(27) 1,2-Dichloropropane. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 1,2-dichloropropane is a health concern at certain levels of exposure. This organic chemical is used as a solvent and pesticide. When soil and climate conditions are favorable, 1,2-dichloropropane may get into drinking water by runoff into surface water or by leaching into groundwater. It may also get into drinking water through improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for 1,2-dichloropropane at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to 1,2-dichloropropane.

(28) Di(2-ethylhexyl)adipate. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that di(2-ethylhexyl)adipate is a health concern at certain levels of exposure. Di(2-ethylhexyl)adipate is a widely used plasticizer in a variety of products, including synthetic rubber, food packaging materials, and cosmetics. It may get into drinking water after improper waste disposal. This chemical has been shown to damage liver and testes in laboratory animals such as rats and mice exposed to high levels. EPA has set the drinking water standard for di(2-ethylhexyl)adipate at 0.4 parts per million (ppm) to protect against the risk of adverse health effects. Drinking water which meets the EPA standards is associated with little to none of this risk and should be considered safe with respect to di(2-ethylhexyl)adipate.

(29) Di(2-ethylhexyl)phthalate. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that di(2-ethylhexyl)phthalate is a health concern at certain levels of exposure. Di(2-ethylhexyl)phthalate is a widely used plasticizer, which is primarily used in the production of polyvinyl chloride (PVC) resins. It may get into drinking water after improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice exposed to high levels over their lifetimes. EPA has set the drinking water standard for di(2-ethylhexyl)phthalate at 0.006 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to di(2-ethylhexyl)phthalate.

(30) Dinoseb. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that dinoseb is a health concern at certain levels of exposure. Dinoseb is a widely used pesticide and generally gets into drinking water after application on orchards, vineyards, and other crops. This chemical has been shown to damage the thyroid and reproductive organs in laboratory animals such as rats exposed to high levels. EPA has set the drinking water standard for dinoseb at 0.007 parts per million (ppm) to protect against the risk of adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to dinoseb.

(31) Diquat. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that diquat is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control terrestrial and aquatic weeds. It may get into drinking water by runoff into surface water. This chemical has been shown to damage the liver, kidney, and gastrointestinal tract and causes cataract formation in laboratory animals such as dogs and rats exposed at high levels over their lifetimes. EPA has set the drinking water standard for diquat at 0.02 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to diquat.

(32) Endothall. The United States Environmental Protection Agency (EPA) has determined that endothall is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control terrestrial and aquatic weeds. It may get into water by runoff into surface water. This chemical has been shown to damage the liver, kidney, gastrointestinal tract, and reproductive system of laboratory animals such as rats and mice exposed at high levels over their lifetimes. EPA has set the drinking water standard for endothall at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects.

Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to endrothall.

(33) Endrin. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that endrin is a health concern at certain levels of exposure. This organic chemical is a pesticide no longer registered for use in the United States. However, this chemical is persistent in treated soils and accumulates in sediments and aquatic and terrestrial biota. This chemical has been shown to cause damage to the liver, kidney, and heart in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. EPA has set the drinking water standard for endrin at 0.002 parts per million (ppm) to protect against the risk of these adverse health effects which have been observed in laboratory animals. Drinking water that meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to endrin.

(34) Epichlorohydrin. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that epichlorohydrin is a health concern at certain levels of exposure. Polymers made from epichlorohydrin are sometimes used in the treatment of water supplies as a flocculent to remove particulates. Epichlorohydrin generally gets into drinking water by improper use of these polymers. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are expected over long periods of time. EPA has set the drinking water standard for epichlorohydrin using a treatment technique to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. This treatment technique limits the amount of epichlorohydrin in the polymer and the amount of the polymer which may be added to drinking water as a flocculent to remove particulates. Drinking water systems which comply with this treatment technique have little to no risk and are considered safe with respect to epichlorohydrin.

(35) Ethylbenzene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined ethylbenzene is a health concern at certain levels of exposure. This organic chemical is a major component of gasoline. It generally gets into water by improper waste disposal or leaking gasoline tanks. This chemical has been shown to damage the kidney, liver, and nervous system of laboratory animals such as rats exposed to high levels during their lifetimes. EPA has set the drinking water standard for ethylbenzene at 0.7 part per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to ethylbenzene.

(36) Ethylene dibromide (EDB). The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that EDB is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, EDB may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for EDB at 0.00005 part per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to EDB.

(37) Fecal Coliforms/E. coli. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that the presence of fecal coliforms or E. coli is a serious health concern. Fecal coliforms and E. coli are generally not harmful themselves, but their presence in drinking water is serious because they usually are associated with sewage or animal wastes. The presence of these bacteria in drinking water is generally a result of a problem with water treatment or the pipes which distribute the water and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water but also may be caused by a number of factors other than your drinking water. EPA has set an enforceable drinking water standard for fecal coliforms and E. coli to reduce the risk of these adverse health effects. Under this standard all drinking water samples must be free of these bacteria. Drinking water which meets this standard is associated with little or none of this risk and should be considered safe. State and local health authorities recommend that consumers take the following precautions: [To be inserted by the public water system, according to instructions from state or local authorities].

(38) Fluoride. The notice shall contain the following language including the language necessary to replace footnotes 1, 2 (if applicable), and 3.

Dear User,

The U.S. Environmental Protection Agency requires that we send you this notice on the level of fluoride in your drinking water. The drinking water in your community has a fluoride concentration of 1 milligrams per liter (mg/L). Federal regulations require that fluoride, which occurs naturally in your water supply, not exceed a concentration of 4.0 mg/L in drinking water. This is an enforceable standard called a Maximum Contaminant Level (MCL), and it has been established to protect the public health. Exposure to drinking water levels above 4.0 mg/L for many years may result in some cases of crippling skeletal fluorosis, which is a serious bone disorder.

Federal law also requires that we notify you when monitoring indicates that the fluoride in your drinking water exceeds 2.0 mg/L. This is intended to alert families about dental problems that might affect children under 9 years of age. The fluoride concentration of your water exceeds this federal guideline.

Fluoride in children's drinking water at levels of approximately 1.0 mg/L reduces the number of dental cavities. However, children exposed to levels of fluoride greater than about 2.0 mg/L may develop dental fluorosis. Dental fluorosis, in its moderate to severe forms, is a brown staining and pitting of the permanent teeth.

Because dental fluorosis occurs only when developing teeth (before they erupt from the gums) are exposed to elevated fluoride levels, households without children are not expected to be affected by this level of fluoride. Families with children under the age of 9 are encouraged to seek other sources of drinking water for their children to avoid the possibility of staining and pitting. Your water supplier can lower the concentration of fluoride in your water so that you will still receive the benefits of cavity prevention while the possibility of stained and pitted teeth is minimized. Removal of fluoride may increase your water costs. Treatment systems are also commercially available for home use. Information on such systems is available at the address given below. Low-fluoride bottled drinking water that would meet all standards is also commercially available.

(If a violation of the MCL (4.0 mg/L) has occurred, the following sentence must also be included: The following steps are being taken to come into compliance with the MCL for fluoride: 2)

For further information, contact 3 at your public water system.

1PWS shall insert the compliance result which triggered notification under this part.

2If a MCL violation occurred, PWS shall insert steps which are being taken to come into compliance with the fluoride MCL.

3PWS shall insert the name, address, and telephone number of a contact person at the PWS.

(39) Glyphosate. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that glyphosate is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control grasses and weeds. It may get into drinking water by runoff into surface water. This chemical has been shown to cause damage to the liver and kidneys in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. EPA has set the drinking water standard for glyphosate at 0.7 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to glyphosate.

(40) Heptachlor. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that heptachlor is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, heptachlor may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standards for heptachlor at 0.0004 part per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to heptachlor.

(41) Heptachlor epoxide. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that heptachlor epoxide is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, heptachlor epoxide may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standards for heptachlor epoxide at 0.0002 part per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to heptachlor epoxide.

(42) Hexachlorobenzene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that hexachlorobenzene is a health concern at certain levels of exposure. This organic chemical is produced as an impurity in the manufacture of certain solvents and pesticides. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed to high levels during their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for hexachlorobenzene at 0.001 parts per million (ppm) to protect against the risk of cancer and other adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to hexachlorobenzene.

(43) Hexachlorocyclopentadiene. The United States Environmental Protection Agency (EPA) establishes drinking water standards and has determined that hexachlorocyclopentadiene is a health concern at certain levels of exposure. This organic chemical is used as an intermediate in the manufacture of pesticides and flame retardants. It may get into water by discharge from production facilities. This chemical has been shown to damage the kidney and the stomach of laboratory animals when exposed at high levels over their lifetimes. EPA has set the drinking water standard for hexachlorocyclopentadiene at 0.05 parts

per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to hexachlorocyclopentadiene.

(44) Lead. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that lead is a health concern at certain exposure levels. Materials that contain lead have frequently been used in the construction of water supply distribution systems, and plumbing systems in private homes and other buildings. The most commonly found materials include service lines, pipes, brass and bronze fixtures, and solders and fluxes. Lead in these materials can contaminate drinking water as a result of the corrosion that takes place when water comes into contact with those materials. Lead can cause a variety of adverse health effects in humans. At relatively low levels of exposure, these effects may include interference with red blood cell chemistry, delays in normal physical and mental development in babies and young children, slight deficits in the attention span, hearing, and learning abilities of children, and slight increases in the blood pressure of some adults. EPA's national primary drinking water regulation requires all public water systems to optimize corrosion control to minimize lead contamination resulting from the corrosion of plumbing materials. Public water systems serving 50,000 people or fewer that have lead concentrations below 15 parts per billion (ppb) in more than 90% of tap water samples (the EPA "action level") have optimized their corrosion control treatment. Any water system that exceeds the action level must also monitor their source water to determine whether treatment to remove lead in source water is needed. Any water system that continues to exceed the action level after installation of corrosion control and/or source water treatment must eventually replace all lead service lines contributing in excess of 15 ppb of lead to drinking water. Any water system that exceeds the action level must also undertake a public education program to inform consumers of ways they can reduce their exposure to potentially high levels of lead in drinking water.

(45) Lindane. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that lindane is a health concern at certain levels of exposure. This organic chemical is used as a pesticide. When soil and climatic conditions are favorable, lindane may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to damage the liver, kidney, nervous system, and immune system of laboratory animals such as rats, mice, and dogs exposed at high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system and circulatory system. EPA has established the drinking water standard for lindane at 0.0002 part per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to lindane.

(46) Mercury. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that mercury is a health concern at certain levels of exposure. This inorganic metal is used in electrical equipment and some water pumps. It usually gets into water as a result of improper waste disposal. This chemical has been shown to damage the kidney of laboratory animals such as rats when the animals are exposed at high levels over their lifetimes. EPA has set the drinking water standard for mercury at 0.002 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to mercury.

(47) Methoxychlor. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that methoxychlor is a health concern at certain levels of exposure. This organic chemical is used as a pesticide. When soil and climatic conditions are favorable, methoxychlor may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to damage the liver, kidney, nervous system, and reproductive system of laboratory animals such as rats exposed at high levels during their lifetimes. It has also been shown to produce growth retardation in rats. EPA has set the drinking water standard for methoxychlor at 0.04 part per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to methoxychlor.

(48) Microbiological contaminants [for use when there is a violation of the treatment technique requirements for filtration and disinfection, R18-4-302 or R18-4-303]. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that the presence of microbiological contaminants are a health concern at certain levels of exposure. If water is inadequately treated, microbiological contaminants in that water may cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water but also may be caused by a number of factors other than your drinking water. EPA has set enforceable requirements for treating drinking water to reduce the risk of these adverse health effects. Treatment such as filtering and disinfecting the water removes or destroys microbiological contaminants. Drinking water which is treated to meet EPA requirements is associated with little to none of this risk and should be considered safe.

(49) Monochlorobenzene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that monochlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a solvent. It generally gets into water by improper waste disposal. This chemical has been shown to damage the liver, kidney, and nervous system of laboratory animals such as rats and mice exposed to high levels during their lifetimes. EPA has set the drinking water standard for monochlorobenzene at 0.1 part per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to monochlorobenzene.

(50) Nitrate. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that nitrate poses an acute health concern at certain levels of exposure. Nitrate is used in fertilizer and is found in sewage and wastes from human and/or farm animals and generally gets into drinking water from those activities. Excessive levels of nitrate in drinking water have caused serious illness and sometimes death in infants under 6 months of age. The serious illness in infants is caused because nitrate is converted to nitrite in the body. Nitrite interferes with the oxygen-carrying capacity of the child's blood. This is an acute disease in that symptoms can develop rapidly in infants. In most cases, health deteriorates over a period of days. Symptoms include shortness of breath and blueness of the skin. Clearly, expert medical advice should be sought immediately if these symptoms occur. The purpose of this notice is to encourage parents and other responsible parties to provide infants with an alternate source of drinking water. Local and state health authorities are the best source for information concerning alternate sources of drinking water for infants. EPA has set the drinking water standard at 10 parts per million (ppm) for nitrate to protect against the risk of these adverse effects. EPA has also set a drinking water standard for nitrite at 1 ppm. To allow for the fact that the toxicity of nitrate and nitrite are additive, EPA has also established a standard for the sum of nitrate and nitrite at 10 ppm. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to nitrate.

(51) Nitrite. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that nitrite poses an acute health concern at certain levels of exposure. This inorganic chemical is used in fertilizers and is found in sewage and wastes from humans and/or farm animals and generally gets into drinking water as a result of those activities. While excessive levels of nitrite in drinking water have not been observed, other sources of nitrite have caused serious illness and sometimes death in infants under 6 months of age. The serious illness in infants is caused because nitrite interferes with the oxygen carrying capacity of the child's blood. This is an acute disease in that symptoms can develop rapidly. However, in most cases, health deteriorates over a period of days. Symptoms include shortness of breath and blueness of the skin. Clearly, expert medical advice should be sought immediately if these symptoms occur. The purpose of this notice is to encourage parents and other responsible parties to provide infants with an alternate source of drinking water. EPA has set the drinking water standard at 1 part per million (ppm) for nitrite to protect against the risk of these adverse effects. EPA has also set a drinking water standard for nitrate (converted to nitrite in humans) at 10 ppm and for the sum of nitrate and nitrite at 10 ppm. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to nitrite.

(52) Oxamyl. The United States Environmental Protection Agency (EPA) establishes drinking water standards and has determined that oxamyl is a health concern at certain levels of exposure. This organic chemical is used as a pesticide for the control of insects and other pests. It may get into drinking water by runoff into surface water or leaching into groundwater. This chemical has been shown to damage the kidneys of laboratory animals such as rats when exposed at high levels over their lifetimes. EPA has set the drinking water standard for oxamyl at 0.2 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to oxamyl.

(53) Pentachlorophenol. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that pentachlorophenol is a health concern at certain levels of exposure. This organic chemical is used as a wood preservative, herbicide, disinfectant, and defoliant. It generally gets into drinking water by runoff into surface water or leaching into groundwater. This chemical has been shown to produce adverse reproductive effects and to damage the liver and kidneys of laboratory animals such as rats exposed to high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the liver and kidneys. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed to high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for pentachlorophenol at 0.001 parts per million (ppm) to protect against the risk of cancer or other adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to pentachlorophenol.

(54) Picloram. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that picloram is a health concern at certain levels of exposure. This organic chemical is used as a pesticide for broadleaf weed control. It may get into drinking water by runoff into surface water or leaching into groundwater as a result of pesticide application and improper waste disposal. This chemical has been shown to cause damage to the kidneys and liver in laboratory animals such as rats when the animals are exposed at high levels over their lifetimes. EPA has set the drinking water standard for picloram at 0.5 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to picloram.

(55) Polychlorinated biphenyls (PCBs). The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that polychlorinated biphenyls (PCBs) are a health concern at certain levels of exposure. These organic chemicals were once widely used in electrical transformers and other industrial equipment. They generally get into drinking water by improper waste disposal or leaking electrical industrial equipment. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of

time. EPA has set the drinking water standard for PCBs at 0.0005 part per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to PCBs.

(56) Selenium. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that selenium is a health concern at certain high levels of exposure. Selenium is also an essential nutrient at low levels of exposure. This inorganic chemical is found naturally in food and soils and is used in electronics, photocopy operations, the manufacture of glass, chemicals, drugs, and as a fungicide and a feed additive. In humans, exposure to high levels of selenium over a long period of time has resulted in a number of adverse health effects, including a loss of feeling and control in the arms and legs. EPA has set the drinking water standard for selenium at 0.05 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to selenium.

(57) Simazine. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that simazine is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control annual grasses and broadleaf weeds. It may leach into groundwater or runs off into surface water after application. This chemical may cause cancer in laboratory animals such as rats and mice exposed at high levels during their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for simazine at 0.004 parts per million (ppm) to reduce the risk of cancer or other adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to simazine.

(58) Styrene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that styrene is a health concern at certain levels of exposure. This organic chemical is commonly used to make plastics and is sometimes a component of resins used for drinking water treatment. Styrene may get into drinking water from improper waste disposal. This chemical has been shown to damage the liver and nervous system in laboratory animals when exposed at high levels during their lifetimes. EPA has set the drinking water standard for styrene at 0.1 part per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to styrene.

(59) 2,3,7,8-TCDD (Dioxin). The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that dioxin is a health concern at certain levels of exposure. This organic chemical is an impurity in the production of some pesticides. It may get into drinking water by industrial discharge of wastes. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for dioxin at 0.00000003 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe with respect to dioxin.

(60) Tetrachloroethylene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that tetrachloroethylene is a health concern at certain levels of exposure. This organic chemical has been a popular solvent, particularly for dry cleaning. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for tetrachloroethylene at 0.005 part per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to tetrachloroethylene.

(61) Thallium. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that thallium is a health concern at certain high levels of exposure. This inorganic metal is found naturally in soils and is used in electronics, pharmaceuticals, and the manufacture of glass and alloys. This chemical has been shown to damage the kidney, liver, brain, and intestines of laboratory animals when the animals are exposed at high levels over their lifetimes. EPA has set the drinking water standard for thallium at 0.002 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to thallium.

(62) Toluene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that toluene is a health concern at certain levels of exposure. This organic chemical is used as a solvent and in the manufacture of gasoline for airplanes. It generally gets into water by improper waste disposal or leaking underground storage tanks. This chemical has been shown to damage the kidney, nervous system, and circulatory system of laboratory animals such as rats and mice exposed to high levels during their lifetimes. Some industrial workers who were exposed to relative large amounts of this chemical during working careers also suffered damage to the liver, kidney, and nervous system. EPA has set the drinking water standard for toluene at 1 part per million (ppm) to protect against the risk of adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to toluene.

(63) Total coliforms [To be used when there is a violation of R18-4-202(A)(1) or R18-4-202(A)(2)] The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that the presence of total coliforms is a possible health concern. Total coliforms are common in the environment and are generally not harmful themselves. The presence of these bacteria in drinking water, however, generally is a result of a problem with water treatment or the pipes which distribute the water and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and any associated headaches and fatigue. The symptoms, however, are not just associated with disease-causing organisms in drinking water but also may be caused by a number of factors other than your drinking water. EPA has set an enforceable drinking water standard for total coliforms to reduce the risk of these adverse health effects. Under this standard, no more than 5.0% of the samples collected during a month can contain these bacteria, except that systems collecting fewer than 40 samples/month that have 1 total coliform-positive sample per month are not violating the standard. Drinking water which meets this standard is usually not associated with a health risk from disease-causing bacteria and should be considered safe.

(64) Toxaphene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that toxaphene is a health concern at certain levels of exposure. This organic chemical was once a pesticide widely used on cotton, corn, soybeans, pineapples, and other crops. When soil and climatic conditions are favorable, toxaphene may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for toxaphene at 0.003 part per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to toxaphene.

(65) 2,4,5-TP. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 2,4,5-TP is a health concern at certain levels of exposure. This organic chemical is used as a herbicide. When soil and climatic conditions are favorable, 2,4,5-TP may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to damage the liver and kidney of laboratory animals such as rats and dogs exposed to high levels during their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the nervous system. EPA has set the drinking water standard for 2,4,5-TP at 0.05 part per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to 2,4,5-TP.

(66) 1,2,4-Trichlorobenzene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 1,2,4-trichlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a dye carrier and as a precursor in herbicide manufacture. It generally gets into drinking water by discharges from industrial activities. This chemical has been shown to cause damage to several organs, including the adrenal glands. EPA has set the drinking water standard for 1,2,4-trichlorobenzene at 0.07 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to 1,2,4-trichlorobenzene.

(67) 1,1,1-Trichloroethane. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that the 1,1,1-trichloroethane is a health concern at certain levels of exposure. This chemical is used as a cleaner and degreaser of metals. It generally gets into drinking water by improper waste disposal. This chemical has been shown to damage the liver, nervous system, and circulatory system of laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during their working careers also suffered damage to the liver, nervous system, and circulatory system. Chemicals which cause adverse effects among exposed industrial workers and in laboratory animals also may cause adverse health effects in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for 1,1,1-trichloroethane at 0.2 parts per million (ppm) to protect against the risk of these adverse health effects which have been observed in humans and laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

(68) 1,1,2-Trichloroethane. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined 1,1,2-trichloroethane is a health concern at certain levels of exposure. This organic chemical is an intermediate in the production of 1,1-dichloroethylene. It generally gets into water by industrial discharge of wastes. This chemical has been shown to damage the kidney and liver of laboratory animals such as rats exposed to high levels during their lifetimes. EPA has set the drinking water standard for 1,1,2-trichloroethane at 0.005 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to 1,1,2-trichloroethane.

(69) Trichloroethylene. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that trichloroethylene is a health concern at certain levels of exposure. This chemical is a common metal cleaning and dry cleaning fluid. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause

cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set forth the enforceable drinking water standard for trichloroethylene at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little or none of this risk and should be considered safe.

(70) Vinyl chloride. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that vinyl chloride is a health concern at certain levels of exposure. This chemical is used in industry and is found in drinking water as a result of the breakdown of related solvents. The solvents are used as cleaners and degreasers of metals and generally get into drinking water by improper waste disposal. This chemical has been associated with significantly increased risks of cancer among certain industrial workers who were exposed to relatively large amounts of this chemical during their working careers. This chemical has also been shown to cause cancer in laboratory animals when the animals are exposed at high levels over their lifetimes. Chemicals that cause increased risk of cancer among exposed industrial workers and in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for vinyl chloride at 0.002 part per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in humans and laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

(71) Xylenes. The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that xylene is a health concern at certain levels of exposure. This organic chemical is used in the manufacture of gasoline for airplanes and as a solvent for pesticides, and as a cleaner and degreaser of metals. It usually gets into water by improper waste disposal. This chemical has been shown to damage the liver, kidney, and nervous system of laboratory animals such as rats and dogs exposed to high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. EPA has set the drinking water standard for xylene at 10 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to xylene.

Historical Note

New Appendix made by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-123. Vending Machines

An owner of a water vending machine shall be responsible for the proper operation of each water vending machine. The owner shall do all of the following:

1. Clean and maintain each water vending machine according to the manufacturer's recommendations;
2. Retain maintenance and cleaning records for 1 year;
3. Have analyses performed at least once every 6 months for total coliform bacteria. Results of such analyses shall be retained for 1 year. If a sample is positive for total coliform, the water vending machine shall be removed from service, and all components shall be cleaned or replaced or serviced. The water vending machine shall not be placed back into service until another total coliform bacteria analysis is performed, and the result is negative; and
4. Maintain in operable condition all ultraviolet, ozone, or other disinfection components and automatic disabling capabilities built into the vending machine for use in the event of a disinfection system malfunction.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2).

R18-4-124. Operation and Maintenance

A water supplier shall maintain and keep in proper operating condition all facilities used in production, treatment, and distribution of the water supply so as to comply with the requirements of this Chapter.

Historical Note

Adopted effective February 9, 1996 (Supp. 96-1).

R18-4-125. Hauled Water

- A. All hauled water for delivery to a public water system shall be obtained from a source that is approved pursuant to R18-4-505(B)(1)(d) or a regulated public water system.
- B. Materials or products which come into contact with the water shall comply with R18-4-119(B).
- C. Roof hatches shall be fitted with a watertight cover.
- D. A bottom drain valve or other provisions to allow complete drainage and cleaning of a water transport container shall be provided.
- E. Hoses which are used to deliver drinking water shall be equipped with a cap and shall remain capped when not in use.

F. A water hauler shall, at all times, maintain a residual free chlorine level of 0.2 mg/l to 1.0 mg/l in the water that is hauled in a water transport container. A chlorine disinfectant shall be added at the time water is loaded into the container. The residual free chlorine level shall be measured each time water is off-loaded from the container. The water hauler shall maintain a log of all on-loading, chlorine disinfectant additions and residual-free chlorine measurements. Such records shall be maintained for at least 3 years and made available to the Department for review upon request.

G. A water transport container shall be for hauling drinking water only. The container shall be plainly and conspicuously labeled "For Drinking Water Use Only."

Historical Note

Adopted effective February 9, 1996 (Supp. 96-1).

ARTICLE 2. MAXIMUM CONTAMINANT LEVELS AND MONITORING REQUIREMENTS; MONITORING ASSISTANCE PROGRAM

R18-4-201. Maximum Contaminant Levels; Public Water Systems Affected

A. Except as provided in this Section, the MCLs prescribed in this Article apply to water distributed by a public water system.

B. Except as provided in subsection (D), only the MCLs for nitrate, nitrite, and total coliform apply to water distributed by a TNCWS.

C. The MCLs for fluoride, arsenic, and radiochemicals apply only to water distributed by a CWS.

D. The interim MCLs for turbidity apply only to water that is distributed by a surface water system that does not provide filtration.

E. The MCL for total trihalomethanes applies only to water distributed by a CWS that serves a population of 10,000 or more and that adds a halogenated disinfectant to the water in any part of the treatment process.

Historical Note

Former Section R9-8-212 repealed, new Section R9-8-212 adopted effective May 26, 1978 (Supp. 78-3). Amended effective August 7, 1979 (Supp. 79-4). Amended effective November 2, 1982 (Supp. 82-6). Amended by renumbering subsections (P) thru (W) as (Q) thru (X) and adding a new subsection (P) effective January 6, 1984 (Supp. 84-1). Former Section R9-8-212 renumbered without change as Section R18-4-212 (Supp. 87-3). Former Section R18-4-212 amended and renumbered as Section R18-4-201 effective June 30, 1989 (Supp. 89-2). Section repealed, new Section adopted effective August 8, 1991 (Supp. 91-3). Section repealed, new Section adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3).

R18-4-202. Total Coliform; MCLs and Monitoring Requirements

A. A public water system shall not distribute water that exceeds the following MCLs for total coliform:

1. When 40 or more routine and repeat samples are collected per month, no more than 5% of the samples may be total coliform-positive. Violation of this subsection is a nonacute violation.

2. When fewer than 40 routine and repeat samples are collected per month, no more than one sample may be total coliform-positive. Violation of this subsection is a nonacute violation.

3. Any fecal coliform-positive repeat sample or *Escherichia coli* (E. coli)-positive repeat sample is an acute violation.

4. Any total coliform-positive repeat sample following a fecal coliform-positive or E. coli-positive routine sample is an acute violation.

B. The MCLs for total coliform are based on the presence or absence of coliform organisms in a standard 100 ml sample.

C. A public water system shall collect total coliform samples at sites that are representative of water throughout the distribution system according to a written site sampling plan that is subject to review and approval by the Department.

D. A public water system shall not composite samples for total coliform analysis.

E. Except as provided by subsection (G), a public water system shall conduct monthly monitoring to determine compliance with the MCLs for total coliform. A public water system shall collect routine total coliform samples at regular time intervals throughout the month, except that a groundwater system that serves 4,900 persons or less may collect all required routine samples on a single day if the samples are taken from different sampling sites.

F. The number of samples taken for total coliform is based on the population served by a public water system. A public water system shall take the following minimum number of samples per month:

Population served	Minimum Number of Samples per Month
25 to 1,000	1
1,001 to 2,500	2
2,501 to 3,300	3

3,301 to 4,100	4
4,101 to 4,900	5
4,901 to 5,800	6
5,801 to 6,700	7
6,701 to 7,600	8
7,601 to 8,500	9
8,501 to 12,900	10
12,901 to 17,200	15
17,201 to 21,500	20
21,501 to 25,000	25
25,001 to 33,000	30
33,001 to 41,000	40
41,001 to 50,000	50
50,001 to 59,000	60
59,001 to 70,000	70
70,001 to 83,000	80
83,001 to 96,000	90
96,001 to 130,000	100
130,001 to 220,000	120
220,001 to 320,000	150
320,001 to 450,000	180
450,001 to 600,000	210
600,001 to 780,000	240
780,001 to 970,000	270
970,001 to 1,230,000	300
1,230,001 to 1,520,000	330
1,520,001 to 1,850,000	360
1,850,001 to 2,270,000	390
2,270,001 to 3,020,000	420
3,020,001 to 3,960,000	450
3,960,001 or more	480

1 Includes public water systems that have at least 15 service connections, but serve fewer than 25 persons.

G. A public water system may request that the Department give written approval to reduce the public water system's total coliform monitoring frequency from monthly to quarterly. The Department's determination of whether to give written approval to reduce total coliform monitoring shall be based on the public water system's compliance with all of the following factors:

1. The public water system is a protected groundwater system;
2. The public water system serves fewer than 1000 persons;
3. The public water system has no history of total coliform contamination in its current configuration; and
4. The most recent sanitary survey of the public water system, conducted under R18-4-118, indicates that the public water system is free of sanitary defects.

H. If a routine sample is total coliform-positive, a public water system shall collect a set of repeat samples within 24 hours of receiving notice of the total coliform-positive test result. A public water system may request that the Department extend this 24-hour time period if the public water system has a logistical problem in collecting repeat samples that is beyond the public water system's control. If the Department grants an extension of the 24-hour period to collect repeat samples, the Department shall specify how much time the public water system has to collect repeat samples.

1. A public water system that collects one routine sample per month or per quarter shall collect at least four repeat samples for each total coliform-positive routine sample found. A public water system that collects more than one routine sample per month shall collect at least three repeat samples for each total coliform-positive routine sample found.
2. A public water system shall collect repeat samples as follows:

- a. The public water system shall collect one repeat sample from the tap where the total coliform-positive routine sample was collected.
 - b. The public water system shall collect one repeat sample from a tap located within five service connections upstream of the sampling site where the total coliform-positive routine sample was collected.
 - c. The public water system shall collect one repeat sample from a tap located within five service connections downstream of the sampling site where the total coliform-positive routine sample was collected.
 - d. If a total coliform-positive routine sample is collected at the end of the distribution system or one away from the end of the distribution system, the Department may waive the requirement to collect at least one repeat sample upstream or downstream of the original sampling site.
 - e. If a public water system is required to take four repeat samples, the fourth repeat sample may be collected from any sampling site in the distribution system.
3. A public water system shall collect all repeat samples on the same day, except that the Department may allow a public water system with a single service connection to collect the required set of repeat samples over a four-day period or to collect a larger volume repeat sample. A larger volume repeat sample may be collected in one or more sample containers of any size provided that the total volume collected is at least 400 ml (300 ml for a public water system with a single service connection that collects more than one routine sample per month).
4. If a repeat sample is total coliform-positive, the public water system shall collect an additional set of repeat samples for the sampling site where the original total coliform-positive routine sample was collected. The additional set of repeat samples shall be collected according to the procedures prescribed in subsections (H)(1) through (H)(3). A public water system shall continue to take additional sets of repeat samples for the sampling site where the original total coliform-positive routine sample was collected until either total coliforms are not detected in one complete set of repeat samples or a MCL for total coliform is violated and the public water system notifies the Department.
- I. A public water system that collects fewer than five routine samples per month and has one or more total coliform-positive routine sample shall collect at least five routine samples during the next month that the public water system provides water to the public. The requirement to take additional routine samples in the next month is in addition to repeat sampling requirements prescribed in subsection (H). The Department may waive the increased routine monitoring requirement in the next month. The Department's determination of whether to waive the increased routine monitoring requirement in the next month shall be based on consideration of the following factors:
1. The Department, or an agent approved by the Department, performs a site visit before the end of the next month that the public water system provides water. Although a sanitary survey need not be performed, the site visit shall be sufficiently detailed to determine whether additional monitoring or any corrective action is needed. The Department shall not approve an employee of the public water system to perform this site visit; or
 2. The Department determines why the routine sample was total coliform-positive and that the public water system has corrected the problem or will correct the problem before the end of the next month that the public water system serves water to the public. In this case, the Department shall document the decision to waive the increased routine monitoring requirement for the next month in writing. The decision document shall be signed by the supervisor of the person who recommends the decision and shall be available to EPA and the public. The decision document shall describe the specific cause of the total coliform-positive routine sample and what action the public water system has taken or will take to correct the problem. The Department shall not waive the increased routine monitoring requirement for the next month solely on the grounds that all repeat samples are total coliform-negative.
- J. The Department may invalidate a total coliform-positive sample. A total coliform-positive sample that is invalidated shall not count towards meeting the minimum monitoring requirements prescribed in subsections (F), (H), and (I) for total coliform. The Department shall consider the following criteria when determining whether to invalidate a total coliform-positive sample:
1. The laboratory that analyzed the samples establishes that improper sample analysis caused a total coliform-positive result. If the Department invalidates a total coliform-positive sample on this ground, the public water system shall collect another sample from the same location as the original sample within 24 hours of being notified of sample invalidation and shall have it analyzed for the presence of coliform organisms. The Department may waive the 24-hour time limit on a case-by-case basis. The Department's decision to invalidate a sample on this ground shall be in writing.
 2. The Department determines on the basis of the results of repeat samples collected and documentation that the total coliform-positive sample was the result of a domestic or other non-distribution system plumbing problem. The Department shall not invalidate a sample on this ground unless the repeat sample collected at the same sampling site as the original total coliform-positive sample also is total coliform-positive and all repeat samples collected within five service connections of the original sampling site are total coliform-negative. The Department's decision to invalidate a total-coliform positive sample on the ground that it is the result of a domestic or other non-distribution system problem shall be in writing. The Department shall not invalidate a total coliform-positive sample on this ground if all repeat samples are total coliform-negative or if the public water system has a single service connection.

3. The Department has substantial grounds to believe that a total coliform-positive result is due to a circumstance or condition that does not reflect water quality in the distribution system. If a total coliform-positive sample is invalidated on this ground, the public water system shall collect the required repeat samples. Repeat samples shall be counted in determining compliance with the MCLs for total coliform. The decision to invalidate a total coliform-positive sample on this ground shall be in writing. The decision document shall be signed by the supervisor of the person who recommends the decision and shall be available to EPA and the public. The decision document shall state the specific cause of the total coliform-positive sample and what action the public water system has taken or will take to correct the problem. The Department shall not invalidate a total coliform-positive sample solely on the ground that all repeat samples are total coliform-negative.

K. If any routine or repeat sample is total coliform-positive, a public water system shall analyze that total coliform-positive culture medium to determine whether fecal coliforms are present, except that a public water system may test for *Escherichia coli* (*E. coli*) in place of fecal coliforms. The Department shall allow a public water system to forego fecal coliform or *E. coli* testing on a total coliform-positive sample if the public water system assumes in every case that any total coliform-positive sample is either fecal coliform-positive or *E. coli*-positive.

L. The results of all routine and repeat samples not invalidated by the Department shall be included in determining compliance with the MCLs for total coliform.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-203. Total Coliform; Special Events

A water system that does not meet the definition of a public water system, but serves a large number of persons for a short duration of time, such as a special event, shall comply with the MCL for total coliform if the total number of user-days exceeds 600. A user-day is calculated by multiplying the number of days the event will run by the average number of persons expected to be served each day. The water system shall submit a minimum of two samples at least seven days before the beginning of the special event. The water system shall submit a minimum of one additional sample to the Department for each day of the special event.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-204. Turbidity; Interim MCLs and Monitoring Requirements

A. Water that is distributed by a surface water system which does not provide filtration shall not exceed the following interim maximum contaminant levels for turbidity:

1. One NTU, as determined by an arithmetic average of the samples taken per month, except that not more than 5 NTUs may be allowed if the water supplier demonstrates, through a history of acceptable microbiological results, that the higher turbidity does not:

- a. Interfere with disinfection;
- b. Prevent maintenance of a detectable residual disinfectant concentration throughout the distribution system; or
- c. Interfere with microbiological determinations.

2. Five NTUs based on an arithmetic average of the samples taken for 2 consecutive days.

B. A surface water system which does not provide filtration shall sample at least once per day to determine compliance with the interim maximum contaminant levels for turbidity.

C. If the result of a turbidity measurement indicates that turbidity exceeds 5 NTUs, then a water supplier shall take a confirmation measurement as soon as practicable, preferably within 1 hour. If the confirmation measurement confirms that turbidity exceeds 5 NTUs, then the water supplier shall report the exceedance to the Department, by telephone or facsimile, within 48 hours. The confirmation measurement shall be used for the purpose of calculating the 2-day and the monthly average.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2).

R18-4-205. Inorganic Chemicals; MCLs

A. Water that is distributed by a community water system or a nontransient, noncommunity water system shall not exceed the following maximum contaminant levels for inorganic chemicals:

Contaminant MCL(mg/L) Alternate

MCL (mg/L)

Antimony 0.006

Arsenic a 0.05
Asbestos 7 MFLb
Barium 2
Beryllium 0.004
Cadmium 0.005
Chromium 0.1
Cyanide (as
free cyanide) 0.2
Fluoride a 4.0
Mercury 0.002
Nitrate (as N) 10 20c
Nitrite (as N) 1
Total nitrate/nitrite 10 20c
Selenium 0.05
Thallium 0.002

a The MCLs for fluoride and arsenic apply to community water systems only.

b "MFL" means million fibers per liter greater than 10 microns in length.

c The Department may allow a noncommunity water system to comply with the alternate MCL for nitrate and for total nitrate/nitrite provided all of the following conditions are met:

- i. The public water system is a noncommunity water system;
- ii. Water provided by the noncommunity water system will not be available to children under 6 months of age;
- iii. The water supplier continuously posts notice of the fact that nitrate levels may exceed the MCL of 10 mg/L;
- iv. The water supplier continuously posts notice of the potential health effects on infants under 6 months of age;
- v. The water supplier notifies the Department annually of nitrate levels that exceed 10 mg/L; and
- vi. No adverse health effects result.

B. Water that is distributed by a TNCWS shall not exceed the MCLs for nitrate, nitrite, and total nitrate/nitrite. The MCLs for other inorganic chemicals listed in this Section do not apply to water that is distributed by a TNCWS.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3).

R18-4-206. Monitoring Requirements for Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Fluoride, Mercury, Selenium, and Thallium.

A. A TNCWS is not required to monitor for the inorganic chemicals listed in this Section. Each CWS and NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall monitor for the following inorganic chemicals:

1. Each CWS shall monitor to determine compliance with the MCLs for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium.
2. Each NTNCWS shall monitor to determine compliance with the MCLs for all of the inorganic chemicals listed in subsection (A)(1) except fluoride and arsenic.

B. Each CWS or NTNCWS shall conduct initial monitoring for inorganic chemicals listed in this Section in the monitoring year designated by the Department.

C. Each CWS and NTNCWS shall monitor for inorganic chemicals at each sampling point as prescribed in R18-4-218.

D. A CWS, NTNCWS, or the contractor on behalf of a CWS or NTNCWS, may composite samples for inorganic chemicals as prescribed in R18-4-219.

E. Each CWS and NTNCWS shall monitor at the following frequencies:

1. Each CWS or NTNCWS shall take 1 sample at each groundwater sampling point once every 3 years.
2. Each CWS or NTNCWS shall take 1 sample annually at each surface water sampling point.

F. A water supplier may use monitoring data collected before the initial monitoring year to satisfy initial monitoring requirements at a sampling point provided at least 1 sample was taken in the 3 years immediately prior to the initial monitoring year.

G. If the analytical results from a sampling point indicate that the concentration of an inorganic chemical exceeds a MCL, a CWS or NTNCWS shall take quarterly samples at that sampling point, beginning in the calendar quarter immediately following collection of the sample that exceeded the MCL. A CWS or NTNCWS shall continue quarterly sampling at the sampling point until:

1. Groundwater sampling points: A minimum of 2 consecutive quarterly samples are taken and the concentration of the inorganic chemical in each sample is below the MCL. If this criterion is met, the Department may decrease the monitoring frequency from quarterly to 1 sample every 3 years. The Department's decision to reduce monitoring frequency shall be in writing.

2. Surface water sampling points: A minimum of 4 consecutive quarterly samples are taken and the concentration of the inorganic chemical in each sample is below the MCL. If this criterion is met, the Department may decrease monitoring frequency from quarterly to annually. The Department's decision to reduce monitoring frequency shall be in writing.

H. If the analytical results of an initial sample indicate that there is an exceedance of a MCL, the Department may require that a water supplier or contractor take a confirmation sample as soon as possible but no later than 2 weeks after taking the initial sample at the same sampling point.

I. Compliance with a MCL for an inorganic chemical is based upon the analytical result from a single sample obtained at each sampling point unless the Department requires a confirmation sample. If the Department requires a confirmation sample, the analytical results of the initial sample and the confirmation sample shall be averaged. The resulting average shall be used to determine compliance with the MCL.

J. Except for a water supplier subject to the monitoring assistance program, a water supplier may apply to the Department to conduct monitoring at a sampling point more frequently than the monitoring frequency specified in subsection (E). If the Department gives written approval to conduct more frequent monitoring at a sampling point, compliance shall be determined by a running annual average at the sampling point. If the running annual average at the sampling point is greater than the MCL, the public water system is out of compliance. If any single analytical results causes the running annual average to exceed the MCL, the public water system is immediately out of compliance.

K. A water supplier may make a written request to, or the Department under the monitoring assistance program, may reduce monitoring frequency for an inorganic chemical at a sampling point. The Department may reduce monitoring frequency at a sampling point as follows:

1. Groundwater sampling points: The Department may reduce monitoring frequency at a groundwater sampling point from once every 3 years to a less frequent basis if a public water system has monitored at least once every 3 years for 9 years at the groundwater sampling point and all previous analytical results for the inorganic chemical are below the MCL.

2. Surface water sampling points: The Department may reduce monitoring frequency at a surface water sampling point from annually to a less frequent basis if the surface water system has monitored annually at the surface water sampling point for at least 3 consecutive years and all previous analytical results for the inorganic chemical are below the MCL.

3. The term of reduced monitoring shall not exceed 9 years.

4. A CWS or NTNCWS shall take at least 1 sample at the sampling point during the reduced monitoring term.

5. In determining the appropriate reduced monitoring frequency at a sampling point, the Department shall consider the following factors:

a. Reported concentrations of the inorganic chemical from all previous monitoring;

b. The degree of variation in the reported concentrations of the inorganic chemical; and

c. Other factors that may affect the concentration of the inorganic chemical such as changes in groundwater pumping rates, the configuration of the CWS or NTNCWS, operating procedures, stream flows, or source water characteristics.

6. The Department's decision to reduce monitoring frequency at a sampling point shall be in writing and shall specify the grounds for the decision. A water supplier may make a written request for reduced monitoring or the Department may grant reduced monitoring on its own. A water supplier shall provide documentation of analytical results that support the request for reduced monitoring. When a CWS or NTNCWS submits new data or if other data relevant to the public water system's appropriate monitoring frequency become available, the Department shall review the data and, if appropriate, revise its determination of monitoring frequency.

7. A CWS or NTNCWS that uses a new source is not eligible for reduced monitoring until it completes 3 consecutive rounds of monitoring from the new source.

L. The Department may grant a public water system a waiver from cyanide monitoring if the Department determines that the system is not vulnerable because there is no industrial source of cyanide.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended effective December 8, 1998 (Supp. 98-4).

R18-4-207. Asbestos; Monitoring Requirements

A. A CWS or NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall conduct monitoring to determine compliance with the MCL for asbestos. A transient, noncommunity water system is not required to monitor for asbestos.

B. A CWS or NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall conduct monitoring for asbestos in the monitoring year designated by the Department during the initial compliance period of each compliance cycle, beginning in the compliance period that starts on January 1, 1993.

C. If the Department determines that a CWS or NTNCWS is vulnerable to asbestos contamination due solely to its source water, the Department shall notify the CWS or NTNCWS in writing that the CWS or NTNCWS, or a contractor on behalf of the CWS or NTNCWS, shall conduct source water monitoring for asbestos at each sampling point as prescribed in R18-4-218. A CWS or NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall take one sample for asbestos at each sampling point.

D. A CWS or NTNCWS, or a contractor on behalf of a CWS or NTNCWS, may composite samples for asbestos as prescribed in R18-4-219.

E. If the Department determines that a CWS or NTNCWS is vulnerable to asbestos contamination solely because of corrosion of asbestos-cement pipe in the distribution system, the Department shall notify the CWS or NTNCWS in writing that the CWS or NTNCWS, or a contractor on behalf of the CWS or NTNCWS, shall take a minimum of one sample at a tap served by asbestos-cement pipe under conditions where asbestos contamination is most likely to occur.

F. If the Department determines that a CWS or NTNCWS is vulnerable to asbestos contamination due to both its source water and corrosion of asbestos-cement pipe, the Department shall notify the CWS or NTNCWS in writing that the CWS or NTNCWS, or a contractor on behalf of the CWS or NTNCWS, shall take one sample at a tap served by asbestos-cement pipe under conditions where asbestos contamination is most likely to occur.

G. If the analytical results of an initial sample do not exceed seven MFL, a CWS or NTNCWS is not required to take another sample at that sampling point until the initial compliance period of the next compliance cycle.

H. If the concentration of asbestos in a sample exceeds seven MFL, a CWS or NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall conduct quarterly monitoring at that sampling point, beginning in the quarter immediately following collection of the sample that exceeds the MCL.

1. A CWS or NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall continue quarterly monitoring at a groundwater sampling point until at least two consecutive quarterly samples are taken in which the concentration of asbestos in each sample does not exceed seven MFL. If the analytical results from two or more consecutive quarterly samples are less than seven MFL, the Department shall give written permission to the public water system to return to base monitoring frequency if the Department determines that the public water system has been reliably and consistently below the MCL for asbestos in previous samples. If the Department gives written permission to return to base monitoring frequency, the public water system is not required to take a repeat sample at the groundwater sampling point until the initial compliance period of the next compliance cycle.

2. A CWS or NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall continue quarterly monitoring at a surface water sampling point until at least four consecutive quarterly samples are taken and the concentration of asbestos in each sample does not exceed seven MFL. If the analytical results from four consecutive quarterly samples are less than seven MFL, the Department shall give written permission to the public water system to return to base monitoring frequency if the Department determines that the public water system has been reliably and consistently below the MCL for asbestos in previous samples. If the Department gives written permission to return to base monitoring frequency, the public water system is not required to take a repeat sample at the surface water sampling point until the initial compliance period of the next compliance cycle.

I. If the results of sampling for asbestos indicate an exceedance of the MCL, the Department may require that one confirmation sample be collected. The confirmation sample shall be collected at the same sampling point as soon as possible but no later than two weeks after the initial sample was taken.

J. Compliance with the MCL for asbestos is determined by the concentration of asbestos in a single sample, unless a confirmation sample is taken. If a confirmation sample is taken, the results of the initial sample and the confirmation sample shall be averaged, and the resulting average shall be used to determine compliance with the MCL for asbestos.

K. If a water supplier of a CWS or NTNCWS believes that a CWS or NTNCWS is not vulnerable to asbestos contamination of its source water or contamination of its distribution system due to corrosion of asbestos-cement pipe, the water supplier may make a written request for an asbestos monitoring waiver from the Department; the Department may also grant a waiver without a written request. A decision by the Department to grant an asbestos monitoring waiver shall be in writing and shall set forth the grounds for the decision. A water supplier shall provide documentation of analytical results that support the request for a monitoring waiver. If the Department grants a waiver, the CWS or NTNCWS is not required to monitor for asbestos.

1. The Department's determination of whether to grant an asbestos monitoring waiver shall be based on consideration of the following factors:

- a. Potential asbestos contamination of the source water;
- b. Use of asbestos-cement pipe for distribution of water; and
- c. Water corrosivity.

2. An asbestos monitoring waiver remains in effect for a compliance cycle. If an asbestos monitoring waiver is not renewed in the first year of the initial compliance period of the following compliance cycle, a CWS or NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall conduct repeat monitoring for asbestos before the end of the initial compliance period of that compliance cycle.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 7 A.A.R. 5067, effective October 16, 2001 (Supp. 01-4).

R18-4-208. Nitrate; Monitoring Requirements

A. All public water systems shall monitor to determine compliance with the MCL for nitrate.

- B. A public water system shall monitor to determine compliance with the MCL for nitrate at each sampling point as prescribed in R18-4-218.
- C. A public water system may composite nitrate samples as prescribed in R18-4-219.
- D. Each public water system shall conduct monitoring for nitrate at the following frequencies:
1. A CWS or NTNCWS shall monitor annually at each groundwater sampling point.
 2. A CWS or NTNCWS shall monitor quarterly at each surface water sampling point.
 3. A TNCWS shall monitor annually at each sampling point.
- E. The Department may reduce the monitoring frequency at a surface water sampling point from quarterly to annually if the analytical results from the sampling point demonstrate that the concentration of nitrate is < 5 mg/L for 4 consecutive quarters. A CWS or NTNCWS shall return to quarterly monitoring at a surface water sampling point if the analytical result for any sample indicates that the concentration of nitrate is ≥ 5 mg/L. If the Department reduces the monitoring frequency at a surface water sampling point from quarterly to annually, the annual sample shall be taken during the quarter which previously yielded the highest analytical result for nitrate. The Department's decision to allow a CWS or NTNCWS to reduce monitoring frequency shall be in writing.
- F. A CWS or NTNCWS that collects a sample from a groundwater sampling point with a concentration of nitrate that is ≥ 5 mg/L shall increase the monitoring frequency at that sampling point from annually to quarterly. The Department may subsequently reduce the monitoring frequency at the groundwater sampling point from quarterly to annually if the analytical results for 4 consecutive quarterly samples are < 10 mg/L. If the Department reduces the monitoring frequency at the groundwater sampling point from quarterly to annually, the annual sample shall be taken during the quarter that previously yielded the highest analytical result for nitrate. If the Department reduces the monitoring frequency at the groundwater sampling point from quarterly to annually, a subsequent detection of nitrate in a concentration that is ≥ 5 mg/L and ≤ 10 mg/L shall not trigger quarterly monitoring. The Department's decision to allow a CWS or NTNCWS to reduce monitoring frequency shall be in writing.
- G. The Department shall not accept monitoring data collected before the initial monitoring year to satisfy initial monitoring requirements for nitrate.
- H. Monitoring waivers for nitrate are prohibited.
- I. If the concentration of nitrate in a sample exceeds 10 mg/L, a water supplier shall take a confirmation sample at the same sampling point within 24 hours of receiving the analytical results of the initial sample. A water supplier that is unable to take a confirmation sample within 24 hours shall issue public notice to persons served by the system in accordance with R18-4-105. A water supplier that does not take a confirmation sample within 24 hours and issues public notice shall take and complete the analysis of a confirmation sample within 2 weeks of receiving the analytical results of the initial sample.
- J. Compliance with the MCL for nitrate is based upon the average of the analytical results of the initial sample and the confirmation sample. If a water supplier fails to take the required confirmation sample within the time prescribed in subsection (I), compliance is based upon the analytical results of the initial sample.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3).

R18-4-209. Nitrite; Monitoring Requirements

- A. A public water system, or a contractor on behalf of a CWS or NTNCWS, shall monitor to determine compliance with the MCL for nitrite.
- B. A public water system, or a contractor on behalf of a CWS or NTNCWS, shall monitor for nitrite at each sampling point as prescribed in R18-4-218.
- C. A public water system, or a contractor on behalf of a CWS or NTNCWS, may composite samples for nitrite as prescribed in R18-4-219.
- D. A public water system, or a contractor on behalf of a CWS or NTNCWS, shall take one sample at each sampling point during the initial compliance period. A public water system, or a contractor on behalf of a CWS or NTNCWS, shall monitor for nitrite in the initial monitoring year designated by the Department within the initial compliance period.
- E. If the analytical result of the initial sample for nitrite at a sampling point is less than 0.5 mg/L (as nitrogen), a public water system is not required to take another nitrite sample at that sampling point until the first compliance period of the next compliance cycle.
- F. If the analytical result of the initial sample for nitrite at a sampling point is greater than or equal to 0.5 mg/L (as nitrogen), a public water system, or a contractor on behalf of a CWS or NTNCWS, shall conduct quarterly monitoring at that sampling point for at least four consecutive quarters.
- G. If the concentration of nitrite in four consecutive quarterly samples at a sampling point does not exceed one mg/L (as nitrogen), the Department shall give written permission to the public water system to reduce its monitoring frequency at a sampling point from quarterly to annually if the Department determines that the public water system has been reliably and consistently below the MCL for nitrite in previous samples.

H. If the Department reduces the monitoring frequency from quarterly to annually, the public water system shall take annual samples during the quarter that previously yielded the highest analytical result for nitrite. If the Department reduces the monitoring frequency at a sampling point from quarterly to annually and there is a subsequent detection of nitrite at the sampling point in the same monitoring period, and the concentration does not exceed one mg/L (as nitrogen), the detection shall not trigger quarterly monitoring.

I. The Department shall not accept monitoring data collected before the initial monitoring year to satisfy initial monitoring requirements for nitrite.

J. The Department shall not grant monitoring waivers for nitrite.

K. If the concentration of nitrite in a sample exceeds one mg/L (as nitrogen), the public water system, or a contractor on behalf of a public water system, shall take a confirmation sample at the same sampling point within 24 hours of receiving the analytical results of the initial sample. A public water system that cannot take a confirmation sample within 24 hours shall issue public notice to persons served by the system in accordance with R18-4-105. A public water system that cannot take a confirmation sample within 24 hours and that issues public notice shall take and complete the analysis of a confirmation sample within two weeks of receiving the analytical results of the initial sample.

L. Compliance with the MCL for nitrite is based upon the average of the analytical results of the initial sample and the confirmation sample. If a public water system fails to take the required confirmation sample, compliance is based upon the analytical results from the initial sample.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended by final rulemaking at 7 A.A.R. 5067, effective October 16, 2001 (Supp. 01-4).

R18-4-210. Fluoride; Special Public Notice

A. A CWS that distributes water with a concentration of fluoride that exceeds 2.0 mg/L but does not exceed 4.0 mg/L shall give public notice to the following:

1. All billing units annually, and
2. All new billing units when service begins.

B. The special public notice shall contain the mandatory health effects language for fluoride prescribed in Appendix A of Article 1.

Historical Note

Adopted effective May 26, 1978 (Supp. 78-3). Amended effective August 7, 1979 (Supp. 79-4). Amended subsection (C) and added subsection (D) effective January 6, 1984 (Supp. 84-1). Former Section R9-8-210 renumbered without change as Section R18-4-210 (Supp. 87-3). Repealed effective June 30, 1989 (Supp. 89-2). New Section adopted effective August 8, 1991 (Supp. 91-3). Section repealed, new Section adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-211. Volatile Organic Chemicals; MCLs

Water that is distributed by a community water system or nontransient, noncommunity water system shall not exceed the following maximum contaminant levels for volatile organic chemicals:

Contaminant MCL (mg/L)

Benzene 0.005

Carbon tetrachloride 0.005

o-Dichlorobenzene 0.6

para-Dichlorobenzene 0.075

1,2-Dichloroethane 0.005

1,1-Dichloroethylene 0.007

cis-1,2-Dichloroethylene 0.07

trans-1,2-Dichloroethylene 0.1

Dichloromethane 0.005

1,2-Dichloropropane 0.005

Ethylbenzene 0.7

Monochlorobenzene 0.1

Styrene 0.1

Tetrachloroethylene 0.005

Toluene 1

1,2,4-Trichlorobenzene 0.07

1,1,1-Trichloroethane 0.2

1,1,2-Trichloroethane 0.005
Trichloroethylene 0.005
Vinyl chloride 0.002
Xylenes (total) 10

Historical Note

Corrected A.R.S. reference (Supp. 77-3). Amended effective May 26, 1978 (Supp. 78-3). Amended effective January 6, 1984 (Supp. 84-1). Former Section R9-8-211 renumbered without change as Section R18-4-211 (Supp. 87-3). Amended effective Dec. 1, 1988 (Supp. 88-4). Repealed effective June 30, 1989 (Supp. 89-2). New Section adopted effective August 8, 1991 (Supp. 91-3). Section repealed, new Section adopted effective April 28, 1995 (Supp. 95-2).

R18-4-212. Volatile Organic Chemical; Monitoring Requirements

A. Each CWS, NTNCWS, or the contractor on behalf of a CWS or NTNCWS, shall monitor to determine compliance with the MCLs for the VOCs listed in R18-4-211. A TNCWS is not required to monitor for the VOCs listed in R18-4-211.

B. A CWS, NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall conduct initial monitoring for VOCs in the monitoring year designated by the Department within the initial compliance period, except that a CWS or NTNCWS shall monitor for vinyl chloride only as prescribed in R18-4-213.

C. A CWS, and NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall monitor to determine compliance with the MCLs for VOCs at each sampling point as prescribed in R18-4-218.

D. A CWS, NTNCWS, or a contractor on behalf of a CWS or NTNCWS, may composite samples for VOCs under R18-4-219.

E. A CWS, NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall take 4 consecutive quarterly samples at each sampling point for each VOC listed in R18-4-211 (except vinyl chloride) during the initial compliance period unless a CWS or NTNCWS qualifies for reduced monitoring or obtains a monitoring waiver. A CWS shall conduct initial monitoring for VOCs in the monitoring year designated by the Department within the initial compliance period.

F. If the concentration of a VOC in 4 consecutive quarterly samples during the initial compliance period is < 0.0005 mg/L, a CWS or NTNCWS shall take 1 sample annually at that sampling point in repeat compliance periods. The Department may further reduce monitoring frequency at a groundwater sampling point to 1 sample every 3 years if, after a minimum of 3 years of sampling at the groundwater sampling point (including the 4 consecutive quarterly samples taken during the initial compliance period) the Department finds that the concentration of the VOC in each annual sample is < 0.0005 mg/L. The Department shall not reduce monitoring frequency at a surface water sampling point to less than annually. The Department's decision to allow reduced monitoring at a sampling point shall be in writing.

G. If the concentration of a VOC in a sample is ≥ 0.0005 mg/L, a CWS or NTNCWS shall sample quarterly for the VOC at that sampling point, beginning in the quarter immediately following collection of the sample that was ≥ 0.0005 mg/L. A CWS or NTNCWS shall continue quarterly monitoring at the sampling point until:

1. For a groundwater sampling point, a minimum of 2 consecutive quarterly samples are taken (which may include the initial detection) and the concentration of the VOC in each sample is below the MCL. If the concentration of the VOC is less than the MCL for a minimum of 2 consecutive quarterly samples, the Department may reduce monitoring frequency at the groundwater sampling point from quarterly to annually. If the Department reduces monitoring frequency, the CWS or NTNCWS shall take the annual sample during the quarter that previously yielded the highest analytical result. If the concentration of the VOC is < 0.0005 mg/L for 3 consecutive annual samples, a CWS or NTNCWS may request that the Department further reduce monitoring frequency to once every 3 years or the CWS or NTNCWS may apply for a monitoring waiver.

2. For a surface water sampling point, a minimum of 4 consecutive quarterly samples are taken (which may include the initial detection) and the concentration of the VOC in each sample is less than the MCL. If the concentration of the VOC is less than the MCL for a minimum of 4 consecutive quarterly samples, the Department may reduce monitoring frequency at the surface water sampling point from quarterly to annually. If the Department reduces monitoring frequency, the CWS or NTNCWS shall take the annual sample during the quarter that previously yielded the highest analytical result. The Department shall not reduce monitoring frequency at a surface water sampling point to less than annually.

H. The Department may require increased monitoring for a VOC if necessary to detect variations in a CWS or NTNCWS. A Department decision to require increased monitoring shall be in writing.

I. The Department shall determine compliance with the MCL for a VOC based upon the analytical results obtained at each sampling point.

1. For a CWS or NTNCWS that samples quarterly or more frequently, the Department shall determine compliance by the running annual average of samples taken at each sampling point. If the running annual average at any sampling point is greater than the MCL, the system is out of compliance. If any quarterly sample causes the running annual average to exceed the MCL, the system is immediately out of compliance.

2. If a CWS or NTNCWS samples on an annual or less frequent basis, the system is out of compliance if the concentration of a VOC in a single sample exceeds the MCL.

3. A CWS or NTNCWS that is out of compliance with a MCL for a VOC at a groundwater or surface water sampling point shall take at least 4 consecutive quarterly samples at that sampling point. The CWS or NTNCWS shall continue quarterly monitoring until the running annual average is below the MCL. If the running annual average is below the MCL, the Department may reduce monitoring frequency at the groundwater or surface water sampling point from quarterly to annually. If the Department reduces monitoring frequency to annually, a CWS or NTNCWS shall take the annual sample during the quarter that previously yielded the highest analytical result. If the concentration of the VOC at a groundwater sampling point is below the MCL for 3 consecutive annual samples, a CWS or NTNCWS may request that the Department further reduce monitoring frequency at that groundwater sampling point to once every 3 years. The Department shall not reduce monitoring frequency at a surface water sampling point to less than annually.

4. If the Department requires a confirmation sample, the analytical result shall be averaged with the initial analytical result and the average used in the compliance determination as specified in subsection (I)(1) or (2).

J. The Department may require a confirmation sample for positive or negative results.

K. A CWS or NTNCWS that does not detect a VOC at a sampling point in a concentration that is ≥ 0.0005 mg/l during initial monitoring may submit a written request to the Department for a waiver from repeat monitoring requirements at that sampling point. The Department may initiate a waiver for a CWS or NTNCWS. A CWS or NTNCWS may not obtain a waiver from initial monitoring requirements. A monitoring waiver for a groundwater sampling point shall be effective for a term not to exceed 6 years. A monitoring waiver for a surface water sampling point shall be effective for a 3-year term. The Department's decision to grant or deny a request for a monitoring waiver shall be in writing. The Department may grant a monitoring waiver as follows:

1. Use waiver: The Department may grant a use waiver if the Department determines that there has been no previous use of the VOC (including transport, storage, or disposal) within the watershed or zone of influence of a well.

2. Susceptibility waiver: If previous use of the VOC is unknown or if it has been used previously, the Department may grant a susceptibility waiver based upon a vulnerability assessment. The Department shall consider the following factors in deciding whether to grant or deny a susceptibility waiver:

a. Previous analytical results,

b. The proximity of the CWS or NTNCWS to a potential point or nonpoint source of contamination. A point source of contamination includes a spill or leak of a chemical at or near a water treatment plant or distribution system pipeline, at a manufacturing, distribution or storage facility, or from a hazardous or municipal waste landfill or other waste handling or treatment facility,

c. The environmental persistence and transport of the VOC,

d. The number of persons served by the CWS or NTNCWS and the proximity of a smaller system to a larger system, and

e. How well the water source is protected against contamination. The Department shall consider factors such as the depth of the well, the type of soil, and wellhead protection for a groundwater system and watershed protection for a surface water system.

3. Sampling conditions for waivers: As a condition of a monitoring waiver for a groundwater sampling point, a CWS or NTNCWS shall take 1 sample at the groundwater sampling point during the time the waiver is effective (that is, 1 sample every 6 years). A CWS or NTNCWS shall update its vulnerability assessment during the term of the waiver, considering the factors listed in subsection (K)(2). The Department may renew a waiver based upon an updated vulnerability assessment provided the assessment reconfirms that the CWS or NTNCWS is not vulnerable to VOC contamination. If the Department does not reconfirm nonvulnerability within 3 years of the initial determination, the waiver automatically terminates and the CWS or NTNCWS shall sample annually at the groundwater sampling point in the next compliance period.

4. Vulnerability assessment updates: A CWS or NTNCWS that receives a monitoring waiver for a surface water sampling point shall sample at the frequency specified by the Department (if any). A CWS or NTNCWS shall update its vulnerability assessment during each compliance period. The Department may update a public water system's vulnerability assessment for a CWS or NTNCWS that is subject to the monitoring assistance program. The Department may renew a waiver based upon an updated vulnerability assessment provided the assessment reconfirms that the CWS or NTNCWS is not vulnerable to VOC contamination. If the Department does not reconfirm nonvulnerability, the waiver automatically terminates and a CWS, NTNCWS, or a contractor on behalf of a CWS or NTNCWS shall sample annually at the surface water sampling point in the next compliance period.

Historical Note

Adopted effective August 8, 1991 (Supp. 91-3). Section repealed, new Section adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended effective December 8, 1998 (Supp. 98-4).

R18-4-213. Vinyl Chloride; Monitoring Requirements

A. A CWS or NTNCWS that detects trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene at a groundwater sampling point shall monitor quarterly for vinyl chloride at that sampling point. If vinyl chloride is not detected in the 1st quarterly sample, the Department may reduce the quarterly monitoring frequency for vinyl chloride to 1 sample during each compliance period. The Department's decision to reduce monitoring frequency for vinyl chloride shall be in writing.

B. A CWS or NTNCWS that detects 1 of the VOCs listed in subsection (A) at a surface water sampling point shall monitor for vinyl chloride at a frequency specified by the Department.

Historical Note

Former Section R9-8-213 repealed, new Section R9-8-213 adopted effective May 26, 1978 (Supp. 78-3). Amended effective August 7, 1979 (Supp. 79-4). Amended effective January 6, 1984 (Supp. 84-1). Former Section R9-8-213 renumbered without change as Section R18-4-213 (Supp. 87-3). Amended effective June 30, 1989 (Supp. 89-2). Section repealed, new Section adopted effective August 8, 1991 (Supp. 91-3). Section repealed, new Section adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3).

R18-4-214. Total Trihalomethanes: MCL And Monitoring Requirements

A. The maximum contaminant level for total trihalomethanes applies only to water that is distributed by a community water system which serves a population of 10,000 or more persons and which adds a halogenated disinfectant to the water at any point in the treatment process [hereafter referred to as a CWS in this Section].

B. The maximum contaminant level for total trihalomethanes is 0.10 mg/L.

C. A CWS shall take 4 samples per quarter for each water treatment plant operated by the CWS. For purposes of this Section, the minimum number of samples required to be taken shall be based upon the number of water treatment plants used by the CWS, except that multiple wells drawing water from a single aquifer may, with Department approval, be considered 1 water treatment plant for determining the minimum number of samples required. All samples taken within a quarter shall be collected within a 24-hour period.

D. At least 25% of the total trihalomethane samples shall be taken at locations within the distribution system which reflect the maximum residence time of water in the system. The remaining 75% of the samples shall be taken at representative locations in the distribution system.

E. Upon the written request of a CWS, the Department may reduce the number of samples taken per quarter to a minimum of 1 sample for each water treatment plant. The Department's decision to reduce the number of samples shall be in writing. The Department may reduce the number of quarterly samples, provided that:

1. The sample is taken at a point in the distribution system which reflects the maximum residence time of the water in the system; and
2. There is at least 1 year of monitoring data which demonstrates that total trihalomethane concentrations are below 0.10 mg/L.
3. If the concentration of total trihalomethanes in any sample exceeds 0.10 mg/L and the analytical results are confirmed by at least 1 confirmation sample taken within 24 hours after such analytical results are received or, if the CWS changes its source or treatment process, the CWS shall immediately resume monitoring in accordance with the monitoring frequency prescribed in subsection (C) and continue such monitoring for at least 1 year.

F. A CWS that is a groundwater system may make a written request that the Department reduce monitoring frequency to a minimum of 1 sample for maximum total trihalomethane potential [MTP] per year for each water treatment plant used by the system. The Department may reduce monitoring frequency by a groundwater system provided the groundwater system submits data which demonstrates that the MTP is less than 0.10 mg/L and the groundwater system is not likely to exceed the maximum contaminant level for total trihalomethanes. The Department's decision to reduce monitoring frequency to 1 sample for MTP per water treatment plant shall be in writing. The required MTP sample shall be taken at a point which reflects the maximum residence time of the water in the distribution system. If the analytical results of a sample taken by a groundwater system for MTP are equal to or greater than 0.10 mg/L and such results are confirmed by at least 1 sample taken within 24 hours after analytical results are received, then the groundwater system shall immediately resume monitoring at the frequency prescribed in subsection (C) and continue such monitoring for at least 1 year. If the groundwater system changes its source of water or treatment process, the groundwater system shall immediately analyze an additional sample for MTP. The additional sample shall be taken at a point which reflects the maximum residence time of the water in the distribution system.

G. The Department may increase monitoring frequency where necessary to detect variations of levels of total trihalomethanes within a distribution system.

H. The results of all analyses taken each quarter shall be arithmetically averaged and reported to the Department within 30 days of a water system's receipt of the last results of the previous quarter. Unless the analytical results are invalidated by the Department because the samples were not collected and analyzed in conformance with this Section, all samples collected shall be used in the computation of the average.

I. Compliance with the maximum contaminant level for total trihalomethanes shall be determined based on a running annual average of quarterly samples collected by a CWS.

Historical Note

Adopted effective August 8, 1991 (Supp. 91-3). Section repealed, new Section adopted effective April 28, 1995 (Supp. 95-2).

R18-4-215. Synthetic Organic Chemicals: MCLs

Water distributed by a CWS or NTNCWS shall not exceed the following MCLs for SOC:

Contaminant MCL (mg/L)

Alachlor 0.002

Atrazine 0.003

Benzo(a)pyrene 0.0002

Carbofuran 0.04

Chlordane 0.002

2,4-D 0.07

Dalapon 0.2

Dibromochloropropane (DBCP) 0.0002

Di(2-ethylhexyl)adipate 0.4

Di(2-ethylhexyl)phthalate 0.006

Dinoseb 0.007

Diquat 0.02

Endothall 0.1

Endrin 0.002

Ethylene dibromide (EDB) 0.00005

Glyphosate 0.7

Heptachlor 0.0004

Heptachlor epoxide 0.0002

Hexachlorobenzene 0.001

Hexachlorocyclopentadiene 0.05

Lindane 0.0002

Methoxychlor 0.04

Oxamyl 0.2

Pentachlorophenol 0.001

Picloram 0.5

Polychlorinated biphenyls (PCBs) 0.0005
(as decachlorobiphenyl)

Simazine 0.004

2,3,7,8-TCDD (Dioxin) 3×10^{-8}

Toxaphene 0.003

2,4,5-TP (Silvex) 0.05

Historical Note

Adopted effective August 8, 1991 (Supp. 91-3). Section repealed, new Section adopted effective April 28, 1995 (Supp. 95-2).

Amended effective June 3, 1998 (Supp. 98-3).

R18-4-216. Synthetic Organic Chemicals; Monitoring Requirements

A. A CWS, NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall monitor to determine compliance with the MCLs for the SOC listed in R18-4-215. A TNCWS is not required to monitor for SOC.

B. A CWS, NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall conduct initial monitoring for SOC in the monitoring year designated by the Department.

C. A CWS, NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall monitor for SOC at each sampling point as prescribed in R18-4-218.

D. A CWS, NTNCWS, or a contractor on behalf of a CWS or NTNCWS, may composite SOC samples as prescribed in R18-4-219.

E. A CWS, NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall take four consecutive quarterly samples at each sampling point during each compliance period.

F. A CWS or NTNCWS may use SOC monitoring data collected in the three years immediately before the initial monitoring year to satisfy initial monitoring requirements.

G. A CWS or NTNCWS may submit a written request to the Department for a reduction in monitoring frequency at a sampling point. The Department may also initiate a reduction in monitoring frequency for a CWS or NTNCWS. The Department may grant a reduction in monitoring frequency at a sampling point after consideration of previous analytical data, and if the CWS or NTNCWS does not detect a SOC at a sampling point during initial monitoring. If the Department decides to reduce monitoring frequency, the decision shall be in writing, and the reduction shall be granted as follows:

1. For a CWS or NTNCWS that serves more than 3,300 persons, the Department may reduce monitoring frequency to a minimum of two quarterly samples in one year at each sampling point during each repeat compliance period. Quarterly samples shall not be taken in consecutive quarters.
 2. For a CWS or NTNCWS that serves 3,300 or fewer persons, the Department may reduce monitoring frequency to a minimum of one sample at each sampling point during each repeat compliance period.
- H. If a CWS or NTNCWS detects a SOC listed in R18-4-215 at a sampling point in a concentration that is greater than or equal to the reporting limit listed under R18-4-104(U)(1)(f), the CWS or NTNCWS shall conduct quarterly monitoring for that SOC at that sampling point, beginning in the quarter immediately following the collection of the sample in which the SOC was detected. The CWS or NTNCWS shall continue quarterly monitoring at the sampling point until:
1. For groundwater sampling points, a minimum of two consecutive quarterly samples are taken and the concentration of the SOC in each sample is below the MCL. If the initial detection that triggers quarterly monitoring is at a concentration that exceeds the MCL for a SOC, a minimum of four consecutive quarterly samples at the sampling point and the concentration of the SOC in each sample is below the MCL.
 2. For surface water sampling points, a minimum of four consecutive quarterly samples are taken and the concentration of the SOC in each sample is below the MCL.
 3. If the concentration of a SOC is below the MCL for the minimum number of consecutive quarterly samples prescribed in subsections (H)(1) or (H)(2), and the Department determines that the CWS or NTNCWS has been reliably and consistently below the MCL for the SOC in previous samples, the Department shall reduce monitoring frequency at the sampling point from quarterly to annually. The Department's decision to reduce monitoring frequency from quarterly to annually shall be in writing. If the Department reduces monitoring frequency to annually, a CWS or NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall take the annual sample during the quarter that previously yielded the highest analytical result. A CWS or NTNCWS that has three consecutive annual samples with no detection of a SOC may submit a written request to the Department for a monitoring waiver according to subsection (M).
- I. The Department may increase monitoring frequency, where necessary, to detect variations within a CWS or NTNCWS (for example, fluctuations in concentration due to seasonal use or changes in water source). The Department's decision to increase monitoring frequency shall be in writing.
- J. If a CWS or NTNCWS, or a contractor on behalf of a CWS or NTNCWS, detects either heptachlor or heptachlor epoxide at a sampling point in a concentration that is greater than or equal to the reporting limit, the CWS or NTNCWS shall have subsequent samples analyzed for both heptachlor and heptachlor epoxide.
- K. The Department shall determine compliance with the MCL for a SOC from the analytical results from each sampling point as follows:
1. For a CWS or NTNCWS that samples quarterly or more frequently at a sampling point, the Department shall determine compliance from the running annual average of all samples taken at the sampling point. If the running annual average is greater than the MCL, the CWS or NTNCWS is out of compliance. If any sample causes the running annual average to exceed the MCL, the CWS or NTNCWS is out of compliance immediately. Any sample below the reporting limit shall be calculated as zero for purposes of determining the running annual average.
 2. If a CWS or NTNCWS samples on an annual or less frequent basis at a sampling point, the CWS or NTNCWS is out of compliance if the concentration of a SOC in a single sample exceeds the MCL.
- L. The Department shall require a confirmation sample whenever the Department has reason to believe that the confirmation sample will provide a more accurate characterization of water quality. If the Department requires a confirmation sample, the analytical result from the confirmation sample shall be averaged with the analytical result from the initial sample. The Department shall use the average to determine compliance under subsection (K)(2).
- M. A CWS or NTNCWS may submit a written request to the Department for a waiver from the monitoring requirements for a SOC; the Department may also initiate a waiver for a CWS or NTNCWS. A monitoring waiver is effective for one compliance period. A CWS or NTNCWS shall reapply for a monitoring waiver in each subsequent compliance period. A CWS or NTNCWS that receives a monitoring waiver is not required to monitor for the SOC during the term of the waiver. The Department's decision of whether to grant a SOC monitoring waiver shall be in writing, and shall be based on consideration of the following factors:
1. Use waivers: The Department may grant a use waiver based upon the results of a vulnerability assessment conducted by the Department or by the CWS or NTNCWS. In deciding whether to grant or deny a use waiver, the Department shall review the vulnerability assessment and consider whether there has been previous use of the SOC (including transport, storage, or disposal) within the watershed or zone of influence of a well. If previous use of the SOC is unknown or if the SOC has been used previously, the Department may grant a susceptibility waiver based upon a vulnerability assessment.
 2. Susceptibility waiver: The Department may grant a susceptibility waiver based upon the results of a vulnerability assessment conducted by the Department or by the CWS or NTNCWS. The Department shall review the vulnerability assessment and consider the following factors in deciding whether to grant or deny a susceptibility waiver:
 - a. Previous analytical results;

- b. The proximity of the CWS or NTNCWS to a potential point source or nonpoint source of contamination. A point source of contamination includes a spill or leak of a SOC at or near a water treatment plant or distribution system pipeline; at a manufacturing, distribution, or storage facility; or from a hazardous or municipal waste landfill; or from another waste handling or treatment facility. A nonpoint source includes the use of pesticides to control insect and weed pests on an agricultural area, forest, home, garden, or other land application use;
- c. The environmental persistence and transport of the SOC;
- d. How well the water source is protected against contamination by the SOC due to factors such as geology and well design (for example, depth to groundwater, type of soil, and the integrity of the well casing);
- e. Elevated nitrate levels at the water supply source;
- f. The use of PCBs in equipment used in the production, storage, or distribution of water; and
- g. Wellhead protection assessments.

N. Each CWS or NTNCWS that monitors for PCBs shall analyze each sample using either EPA Method 505 or EPA Method 508, listed in R9-14-611(E)(4). If PCBs are not detected (as 1 of 7 Aroclors) in the sample in a concentration that exceeds the reporting limits listed in this subsection, the CWS or NTNCWS is in compliance with the MCL for PCBs. If a PCB is detected (as 1 of 7 Aroclors) in a concentration that exceeds the reporting limit for the Aroclor listed in this subsection, the sample shall be reanalyzed using EPA Method 508(A), listed in R9-14-611(E)(4), to quantitate PCBs as decachlorobiphenyl. The Department shall determine compliance with the MCL for PCBs (as decachlorobiphenyl) from the EPA Method 508(A) analytical result.

Aroclor	Reporting limit (mg/L)
1016	0.00008
1221	0.02
1232	0.0005
1242	0.0003
1248	0.0001
1254	0.0001
1260	0.0002

effective August 8, 1991 (Supp. 91-3). Section repealed, new Section adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended effective December 8, 1998 (Supp. 98-4). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-217. Radiochemicals; MCLs and Monitoring Requirements

A. Water distributed by a CWS shall not exceed the following MCLs:

- 1. 5 pCi/l for combined radium-226 and radium-228;
 - 2. 15 pCi/l for gross alpha particle activity, including radium-226 but excluding radon and uranium; and
 - 3. Four millirem per year annual dose equivalent to either the total body or to an internal organ (average annual concentration of beta particle and photon radioactivity from man-made radionuclides.)
- a. Except for Tritium and Strontium-90, the concentration of man-made radionuclides causing 4 millirem total body or organ dose equivalents shall be calculated on the basis of a two-liter per day drinking water intake using the 168-hour data listed in the National Bureau of Standards Handbook 69, incorporated by reference in the definition of "man-made beta particle and photon emitters" in R18-4-101.

b. The Department assumes that the following average annual concentrations of Tritium and Strontium-90 produce a total body or organ dose equivalent of four millirem per year:

Radionuclide	Critical organ	pCi/L
Tritium	Total body	20,000
Strontium-90	Bone marrow	8

c. If two or more radionuclides are present, the sum of their annual dose equivalents to the total body or to any internal organ shall not exceed four millirem/year.

B. A CWS, or a contractor on behalf of a CWS, shall monitor for gross alpha particle activity, radium-226, and radium-228 as follows:

- 1. A CWS, or a contractor on behalf of a CWS, shall monitor each sampling point as prescribed in R18-4-218 once every four years. A CWS, or a contractor on behalf of a CWS, shall take four consecutive quarterly samples at each sampling point for gross alpha particle radioactivity, radium-226, and radium-228 analysis.
- 2. The Department shall determine compliance with the MCLs in subsections (A)(1) and (A)(2) from the analytical results of a composite sample composed of four consecutive quarterly samples or the average of the analytical results of four consecutive quarterly samples, whichever method the public water system chooses.

3. A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analyses if the measured gross alpha particle activity does not exceed five pCi/L at a confidence level of 95 percent (1.65 Fs where Fs is the standard deviation of the net counting rate of the sample).
 - a. If a gross alpha particle activity measurement exceeds five pCi/L, the same sample shall be analyzed for radium-226. If the concentration of radium-226 exceeds three pCi/L, the same sample shall be analyzed for radium-228.
 - b. If a gross alpha particle activity measurement exceeds 15 pCi/L, the same sample shall be analyzed for uranium and the uranium result shall be subtracted from the gross alpha particle activity measurement to determine compliance with subsection (A)(2).
 - c. The Department shall consider the following criteria in determining whether to require radium-226 and radium-228 analyses:
 - i. Whether the gross alpha particle activity exceeds two pCi/L, and
 - ii. Whether radium-228 may be present in the local drinking water.
 - C. If the MCL for gross alpha particle activity or combined radium-226 and radium-228 is exceeded, the CWS, or a contractor on behalf of a CWS, shall monitor quarterly at the sampling point until a monitoring schedule that is a condition of a variance, exemption, compliance agreement, or enforcement action is effective or the annual average concentration no longer exceeds the MCL due to one or more of the following:
 1. Treatment,
 2. Removal of a source from service, or
 3. A blending plan approved under R18-4-221.
 - D. If the Department determines that current monitoring results demonstrate a need for more frequent monitoring, the Department shall order a CWS to conduct more frequent monitoring for gross alpha particle activity, radium-226, or radium-228. The Department's determination shall be based on one or more of the following:
 1. The CWS is in the vicinity of mining or other operations that may contribute alpha particle radioactivity to either surface or groundwater sources of drinking water;
 2. There is possible radiochemical contamination of surface or groundwater sources of drinking water; or
 3. Changes in the distribution system or treatment process occur that may increase the concentration of radioactivity in drinking water.
 - E. When the concentration of radium-226 exceeds three pCi/L, and the Department determines that annual monitoring is required based on previous monitoring results, the Department shall order a CWS to conduct annual monitoring for gross alpha particle radioactivity, radium-226, or radium-228 at one or more sampling points.
 - F. The Department shall reduce monitoring for gross alpha particle radioactivity, radium-226, or radium-228 as follows:
 1. The Department shall allow a CWS to substitute a single annual sample for the four consecutive quarterly samples prescribed in subsection (B) if an annual record establishes that the average annual concentration is less than one-half the MCLs prescribed in subsection (A).
 2. The Department shall allow a CWS to stop monitoring for radium-228 if:
 - a. The CWS has monitored radium-228 at least once using the quarterly monitoring procedure prescribed in subsection (B), and
 - b. The radium-226 concentration is less than three pCi/L.
 - G. A CWS or a contractor on behalf of a CWS shall take four consecutive quarterly samples as prescribed in subsection (B) at the point-of-entry to the distribution system within one year of the introduction of a new water source.
 - H. A CWS that uses two or more sources that are combined before the point-of-entry into the distribution system and that have different concentrations of radioactivity shall monitor each source and the blended water at the point-of-entry when ordered to by the Department.
 - I. A CWS that is a surface water system that serves more than 100,000 persons and any CWS that the Department determines is subject to potential health risks from man-made radioactivity shall monitor for gross beta particle radioactivity, Tritium, and Strontium-90 as follows:
 1. A CWS that is a surface water system that serves more than 100,000 persons shall monitor at each surface water sampling point as prescribed in R18-4-218. A CWS that the Department determines is subject to potential health risks from man-made radioactivity shall monitor at sampling points designated by the Department.
 2. A CWS or a contractor on behalf of a CWS shall take four consecutive quarterly samples at each sampling point for gross beta particle radioactivity, Tritium, and Strontium-90 analysis once every four years, unless subsection (H)(3) applies.
 - a. If the average annual concentration of gross beta particle radioactivity is less than 50 pCi/L, the sample shall be analyzed to determine the concentrations of Tritium and Strontium-90. A CWS is in compliance with the MCLs for man-made radioactivity prescribed in subsection (A)(3) if the average annual concentration of gross beta particle radioactivity is less than 50 pCi/L, the average annual concentration of Tritium is less than 20,000 pCi/L, the average annual concentration of Strontium-90 is less than eight pCi/L, and the sum of the annual dose equivalents for Tritium and Strontium-90 is less than 4 millirem / year.
 - b. If gross beta particle radioactivity is greater than 50 pCi/L, the sample shall be analyzed to identify the major radioactive constituents present and the appropriate internal organ and total body doses shall be calculated to determine compliance with subsection (A)(3).

3. A CWS that utilizes water that the Department determines may be contaminated by effluent from a nuclear facility shall monitor for gross beta particle radioactivity, Iodine-131, Strontium-90, and Tritium as follows:
- A CWS shall monitor monthly for gross beta particle radioactivity. Compliance shall be based upon the analysis of a composite sample made up of three monthly samples or the average concentration of three monthly samples.
 - If the concentration of gross beta particle radioactivity is greater than 15 pCi/L, the same sample shall be analyzed for Strontium-89 and Cesium-134. A CWS is in compliance with the MCLs for man-made radioactivity prescribed in subsection (A)(3) if the average concentration of gross beta particle radioactivity is less than 50 pCi/L, the average concentration of Cesium-134 is less than 80 pCi/L, the average concentration of Strontium-89 is less than 80 pCi/L, and the sum of the annual dose equivalents for Strontium-89 and Cesium-134 is less than 4 millirem / year.
 - If the concentration of gross beta particle radioactivity is greater than 50 pCi/L, the same sample shall be analyzed to identify the man-made radionuclides that are present. The internal organ and total body dose equivalents shall be calculated for the man-made radionuclides that are present to determine compliance with the MCL prescribed in subsection (A)(3).
 - A CWS or a contractor on behalf of a CWS shall take a composite of five consecutive daily samples once each quarter for Iodine-131 analysis. If Iodine-131 is detected, the CWS shall conduct more frequent monitoring at a frequency designated by the Department. If the concentration of Iodine-131 in the composite sample is greater than three pCi / L, the CWS is out of compliance.
 - A CWS or a contractor on behalf of a CWS shall take four consecutive quarterly samples for Strontium-90 and Tritium analyses each year. Compliance shall be based upon the analysis of a composite sample or the annual average concentration of four consecutive quarterly samples, as determined by the Department. A CWS is in compliance with the MCLs for man-made radioactivity prescribed in subsection (A)(3) if the average annual concentration of Tritium is less than 20,000 pCi/L, the average annual concentration of Strontium-90 is less than eight pCi/L, and the sum of the annual dose equivalents for Tritium and Strontium-90 is less than 4 millirem per year.
 - The Department shall allow the substitution of environmental surveillance data taken in conjunction with a nuclear facility for direct monitoring of man-made radioactivity by a CWS if the Department determines that the data are applicable to the CWS.
4. A CWS that violates a MCL for man-made radioactivity shall monitor monthly until the average concentration for 12 consecutive months no longer exceeds the MCL or the Department specifies a monitoring schedule as a condition to a variance, exemption, compliance agreement, or enforcement action.
5. A CWS that is a surface water system shall monitor at surface water points-of-entry. If the Department determines that a CWS is subject to potential health risk from man-made radioactivity the CWS shall monitor at points-of-entry designated by the Department.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended by final rulemaking at 7 A.A.R. 5067, effective October 16, 2001 (Supp. 01-4).

R18-4-218. Sampling Points

- A. A public water system shall monitor to determine compliance with MCLs at sampling points as follows:
- At each point-of-entry into the distribution system that is representative of water from each well after treatment, and
 - At each point-of-entry into the distribution system that is representative of each surface water source after treatment or at a point located before the first service connection that is representative of each surface water source after treatment.
- B. If a public water system draws water from more than one source and the sources are combined before distribution, the public water system shall sample at points-of-entry into the distribution system during periods of normal operating conditions.
- C. A public water system shall take each sample in subsequent monitoring periods at the same sampling point unless conditions make another sampling point more representative of water from each source after treatment.
- D. A public water system shall sample for total coliforms at sampling sites identified in a written site sampling plan that is subject to Department review and approval.
- E. A CWS shall sample for total trihalomethanes at sampling points as prescribed in R18-4-214.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-219. Sample Compositing

- A. A public water system may composite up to five samples provided that the detection limit of the method used for analysis is less than 1/5 of the MCL for the contaminant.
- B. Compositing of samples shall be performed by a licensed laboratory and shall be analyzed within 14 days of sample collection.

C. A public water system may composite up to five samples from sampling points within the same public water system. A public water system serving 3,300 or fewer persons may composite samples with samples taken from other public water systems serving 3,300 or fewer persons. A contractor may composite samples for a CWS or NTNCWS that is subject to the monitoring assistance program as prescribed in this Section.

D. A public water system, or a contractor on behalf of the public water system, shall take a follow-up sample at each sampling point included in a composite sample within 14 days after the public water system is notified of a detection in (D)(1), (D)(2), or (D)(3), if:

1. Inorganic chemicals: An inorganic chemical is detected in a composite sample in a concentration greater than or equal to 1/5 the MCL, the follow-up sample shall be analyzed for the inorganic chemical that was detected in the composite sample in a concentration greater than or equal to 1/5 of the MCL.

2. VOCs: A VOC is detected in a composite sample in a concentration greater than or equal to 0.0005 mg/L, the follow-up sample shall be analyzed for the VOC that was detected in the composite sample in a concentration greater than or equal to 0.0005 mg/L.

3. SOC: A SOC is detected in a composite sample in a concentration that exceeds the reporting limit for that SOC prescribed in R18-4-104(U)(2)(c), the follow-up sample shall be analyzed for the SOC that was detected in the composite sample in a concentration that exceeded the reporting limit.

4. If a duplicate of the original sample that was included in the composite sample is available, the public water system may use the duplicate instead of taking a follow-up sample. The duplicate sample shall be analyzed within method holding times and the results reported to the Department within 14 days after completion of the composite sample analysis.

E. Special compositing rules:

1. Compositing VOC samples before GC analysis:

a. Add 5 ml or equal larger amounts of each sample (up to five samples are allowed) to a 25 ml glass syringe. Special precautions shall be taken to maintain zero headspace in the syringe. If less than five samples are used for compositing, a proportionately smaller syringe may be used.

b. Samples shall be cooled at 4° C to minimize volatilization losses.

c. The composite sample shall be well mixed. A 5 ml aliquot shall be drawn from the composite sample for GC analysis.

d. Introduce a sample, purge, and desorb as prescribed in the approved analytical method.

2. Compositing samples before GC/MS analysis:

a. Inject 5 ml or equal larger amounts of each aqueous sample (up to five samples are allowed) into a 25 ml purging device using the sample introduction technique described in the approved method.

b. The total volume in the purging device shall be 25 ml.

c. Purge and desorb as prescribed in the approved method.

3. Vinyl chloride samples shall not be composited.

4. Samples that are composited cannot be screened for PCBs using EPA Method 505 or EPA Method 508. Samples that are composited for PCB analysis shall be analyzed using EPA Method 508A, listed in R9-14-611(E)(4).

5. A public water system shall not composite tap water samples for lead and copper. A public water system may composite source water samples for lead and copper. If lead or copper is detected in a composite sample in a concentration greater than or equal to the method detection limit for lead or greater than or equal to 0.160 mg/L for copper, the public water system shall take and analyze a follow-up sample within 14 days at each sampling point included in the composite sample. If a duplicate of or a sufficient quantity of the original samples from each sampling point used in the composite is available, the public water system may have the duplicate analyzed instead of taking a follow-up sample.

6. A public water system shall not composite toxaphene samples unless the analytical method has a method detection limit that is less than or equal to 0.0006 mg/L.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended effective December 8, 1998 (Supp. 98-4). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-220. Best Available Technology

A. A public water system that is not in compliance with an applicable MCL shall install and use best available technology to achieve compliance with that MCL. The best available technologies for achieving compliance with MCLs are as follows:

1. Inorganic chemicals

Chemical	BATs
Antimony	2, 9
Asbestos	2, 3, 4, 5
Barium	7, 8, 9, 10

Beryllium	1, 2, 7, 8, 9
Cadmium	2, 7, 8, 9
Chromium III	2, 7, 8, 9
Chromium VI	2, 7, 9
Cyanide	7, 9, 11
Fluoride	1, 9
Mercury	2a, 6, 8a, 9a
Nickel	7, 8, 9
Nitrate	7, 9, 10
Nitrite	7, 9
Selenium IV	1, 2, 8, 9, 10
Selenium VI	1, 7, 8, 9
Thallium	1, 7

Key to BATs	
1 = Activated alumina	7 = Ion exchange
2 = Conventional filtration ^b	8 = Lime softening ^b
3 = Corrosion control	9 = Reverse osmosis
4 = Direct filtration	10 = Electrodialysis
5 = Diatomaceous earth filtration	11 = Chlorine oxidation
6 = Granular activated carbon	

aBAT only if influent Hg concentration is less than 10 mg/L.

bNot BAT for public water systems with less than 500 service connections.

2. Synthetic and volatile organic chemicals:

Chemical	GAC	PTA	OX
Alachlor	X		
Atrazine	X		
Benzene	X	X	
Benzo(a)pyrene	X		
Carbofuran	X		
Carbon tetrachloride	X	X	
Chlordane	X		
2,4-D	X		
Dalapon	X		
Dibromochloropropane (DBCP)	X	X	
o-Dichlorobenzene	X	X	
para-Dichlorobenzene	X	X	
1,2-Dichloroethane	X	X	
1,1-Dichloroethylene	X	X	
cis-1,2-Dichloroethylene	X	X	
trans-1,2-Dichloroethylene	X	X	
Dichloromethane		X	
1,2-Dichloropropane	X	X	
Di(2-ethylhexyl)adipate	X	X	
Di(2-ethylhexyl)phthalate	X		
Dinoseb	X		
Diquat	X		

Endothall	X		
Endrin	X		
Ethylbenzene	X	X	
Ethylene dibromide (EDB)	X	X	
Glyphosate			X
Heptachlor	X		
Heptachlor epoxide	X		
Hexachlorobenzene	X		
Hexachlorocyclopentadiene	X	X	
Lindane	X		
Methoxychlor	X		
Monochlorobenzene	X	X	
Oxamyl (Vydate)	X		
Pentachlorophenol	X		
Picloram	X		
Polychlorinatedbiphenyls (PCBs)	X		
Simazine	X		
Styrene	X	X	
2,3,7,8-TCDD (Dioxin)	X		
Tetrachloroethylene	X	X	
Toluene	X	X	
Toxaphene	X		
2,4,5-TP (Silvex)	X		
1,2,4-Trichlorobenzene	X	X	
1,1,1-Trichloroethane	X	X	
1,1,2-Trichloroethane	X	X	
Trichloroethylene	X	X	
Vinyl chloride	X		
Xylenes (total)	X	X	

Key to BATs:

GAC = Granulated activated carbon

PTA = Packed tower aeration

OX = Chlorine or ozone oxidation

B. The best available technologies, treatment techniques, or other means for achieving compliance with the MCLs for total coliform are as follows:

1. Protection of wells from contamination by coliforms by appropriate placement and construction;
2. Maintenance of a disinfectant residual throughout the distribution system;
3. Maintenance of the distribution system, which includes appropriate pipe replacement and repair procedures, ongoing main flushing programs, proper operation and maintenance of storage tanks and reservoirs, and continual maintenance of positive water pressure in all parts of the distribution system; and
4. Filtration and disinfection of surface water and groundwater under the direct influence of surface water or disinfection of groundwater.

C. The best available technology for achieving compliance with the MCL for turbidity is filtration.

D. The best available technologies, treatment techniques or other means for achieving compliance with the MCL for total trihalomethanes are as follows:

1. Use of chloramines as an alternate or supplemental disinfectant or oxidant;
2. Use of chlorine dioxide as an alternate or supplemental disinfectant or oxidant;
3. Improved existing clarification for trihalomethane precursor reduction;
4. Moving the point of chlorination to reduce total trihalomethane formation and, if necessary, substituting chloramines, chlorine dioxide, or potassium permanganate for the use of chlorine as a pre-oxidant; and
5. Use of powdered activated carbon for trihalomethane precursor or total trihalomethane reduction seasonally or intermittently at dosages not to exceed 10 mg/L on an annual average basis.

- E. A public water system may defer installation and use of best available technology by obtaining an exemption under R18-4-111. The Department may require a public water system to use bottled water, point-of-use treatment devices, point-of-entry treatment devices, or other means as a condition of granting an exemption to avoid an unreasonable risk to public health.
- F. A public water system shall install and use best available technology as a condition for granting a variance under R18-4-110. The Department may require a public water system to use bottled water, point-of-use treatment devices, point-of-entry treatment devices, or other means as a condition of granting a variance to avoid an unreasonable risk to public health.
- G. An alternative technology, the removal of a source from service, or blending may be used to achieve compliance with a MCL provided that the alternative technology, source removal, or blending is approved, in writing, by the Department and is at least as effective as the best available technology identified in this Section.
- H. A public water system that serves 10,000 or fewer persons may use the following compliance technologies to achieve compliance with a MCL. A public water system may use any additional compliance technologies allowed by EPA under 42 U.S.C. 300g-1(b)(4)(E)(ii) (2001) to achieve compliance with a MCL or treatment technique requirement.
1. Inorganic Chemicals:

Chemical	Compliance Technologies for Public Water Systems Serving 25 to 10,000 Persons
Antimony	4, 5, 13
Arsenic	1, 2, 3, 4, 5, 11, 12, 13
Asbestos	4, 8, 9, 14, 15
Barium	2, 3, 4, 5, 11, 12, 13
Beryllium	1, 2, 3, 4, 5, 12, 13
Cadmium	2, 3, 4, 5, 12, 13
Chromium III	2, 3, 4, 5, 12, 13
Chromium VI	2, 4, 5, 12, 13
Cyanide	2, 5, 6, 7
Fluoride	1, 5, 13
Mercury	3 a , 4 a , 5 a , 10
Nitrate	2, 5, 11
Nitrite	2, 5
Nitrate + Nitrite	2, 5, 11
Selenium IV	1, 3, 4, 5, 11, 13
Selenium VI	1, 2, 3, 5, 13
Thallium	1, 2, 12

a Compliance technologies only when influent mercury concentrations are less than or equal to 10 Fg/L.

Key to Compliance Technologies for Inorganic Chemicals	
1. Activated Alumina	9. Diatomaceous Earth Filtration
2. Ion Exchange (IX)	10. Granular Activated Carbon
3. Lime Softening	11. Electrodialysis Reversal
4. Coagulation and Filtration	12. Point-of-Use - IX
5. Reverse Osmosis (RO)	13. Point-of-Use - RO
6. Alkaline Chlorination	14. pH and Alkalinity Adjustment (chemical feed)
7. Ozone Oxidation	15. Inhibitors
8. Direct Filtration	

2. Synthetic and Volatile Organic Chemicals:

Chemical	Compliance Technologies for Public Water Systems Serving 25 to 10,000 Persons
Alachlor	1, 2, 3
Atrazine	1, 2, 3
Benzene	1, 6, 7, 8, 9, 10

Benzo(a)pyrene	1, 2, 3
Carbofuran	1, 2, 3
Carbon Tetrachloride	1, 6, 7, 8, 9, 10
Chlordane	1, 2, 3
2,4-D	1, 2, 3
Dalapon	1, 2, 3
Dibromochloropropane (DBCP)	1, 2, 3, 6, 7, 8, 9, 10
o-Dichlorobenzene	1, 6, 7, 8, 9, 10
para-Dichlorobenzene	1, 6, 7, 8, 9, 10
1, 2 -Dichloroethane	1, 6, 7, 8, 9, 10
1,1-Dichloroethylene	1, 6, 7, 8, 9, 10
cis-1,2-Dichloroethylene	1, 6, 7, 8, 9, 10
trans-1, 2-Dichloroethylene	1, 6, 7, 8, 9, 10
Dichloromethane	1, 6, 7, 8, 9, 10
1, 2 -Dichloropropane	1, 6, 7, 8, 9, 10
Di(2-ethylhexyl)adipate	1, 2, 3, 6, 7, 8, 9, 10
Di(2-ethylhexyl)phthalate	1, 2, 3
Dinoseb	1, 2, 3
Diquat	1, 2, 3
Endothall	1, 2, 3
Endrin	1, 2, 3
Ethylbenzene	1, 6, 7, 8, 9, 10
Ethylene Dibromide (EDB)	1, 2, 3, 6, 7, 8, 9, 10
Glyphosate	4, 5
Heptachlor	1, 2, 3
Heptachlor Epoxide	1, 2, 3
Hexachlorobenzene	1, 2, 3
Hexachlorocyclopentadiene	1, 2, 3, 6, 7, 8, 9, 10
Lindane	1, 2, 3
Methoxychlor	1, 2, 3
Monochlorobenzene	1, 6, 7, 8, 9, 10, 11, 12
Oxamyl (Vydate)	1, 2, 3
Pentachlorophenol	1, 2, 3
Picloram	1, 2, 3
Polychlorinated Biphenyls (PCBs)	1, 2, 3
Simazine	1, 2, 3
Styrene	1, 6, 7, 8, 9, 10
2,3,7,8-TCDD (Dioxin)	1, 2, 3
Tetrachloroethylene	1, 6, 7, 8, 9, 10
Toluene	1, 6, 7, 8, 9, 10
Toxaphene	1, 2, 3
2,4,5-TP (Silvex)	1, 2, 3
1, 2, 4-Trichlorobenzene	1, 6, 7, 8, 9, 10
1, 1, 1-Trichloroethane	1, 6, 7, 8, 9, 10, 11
1, 1, 2-Trichloroethane	1, 6, 7, 8, 9, 10
Trichloroethylene	1, 6, 7, 8, 9, 10, 11, 12

Vinyl Chloride	1, 6, 7, 8, 9, 10
Xylenes (total)	1, 6, 7, 8, 9, 10

Key to Compliance Technologies for Synthetic and Volatile Organic Chemicals	
1. Granular Activated Carbon (GAC)	7. Diffused Aeration
2. Point-of-Use - GAC	8. Multi-Stage Bubble Aerators
3. Powdered Activated Carbon	9. Tray Aeration
4. Chlorination	10. Shallow Tray Aeration
5. Ozonation	11. Spray Aeration
6. Packed Tower Aeration (PTA)	12. Mechanical Aeration

3. Radionuclides:

Contaminant	Compliance Technologies for Public Water Systems Serving 25 to 10,000 Persons
combined radium-226 and radium-228	1, 2, 3, 4, 5, 6, 7, 8, 9
gross alpha particle activity	3, 4
total beta particle activity and photon activity, average annual concentration	1, 2, 3, 4

Key to Compliance Technologies for Radionuclides	
1. Ion Exchange (IX)	6. Green Sand Filtration
2. Point-of-Use - IX	7. Co-precipitation with Barium Sulfate
3. Reverse Osmosis (RO)	8. Electrodialysis/Electrodialysis Reversal
4. Point-of-Use - RO	9. Pre-formed Hydrous Manganese Oxide Filtration
5. Lime Softening	

Historical Note

Adopted effective May 26, 1978 (Supp. 78-3). Amended effective August 7, 1979 (Supp. 79-4). Amended effective January 6, 1984 (Supp. 84-1). Former Section R9-8-220 renumbered without change as Section R18-4-220 (Supp. 87-3). Section repealed effective June 30, 1989 (Supp. 89-2). New Section adopted effective August 8, 1991 (Supp. 91-3). Section repealed, new Section adopted April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-221. Use of Blending to Achieve Compliance with Maximum Contaminant Levels

A. A public water system may use blending to achieve compliance with a maximum contaminant level MCL if all of the following requirements are met:

1. The public water system has obtained the Department's written approval for a blending plan that includes the following elements:
 - a. Detailed drawings and schematics that show flow, concentrations, and controls;
 - b. Proposed automatic or electronic devices that will be incorporated to ensure that the blend remains in the desired range or shuts off the offending source or triggers an alarm when the blend falls out of the desired range;
 - c. Individual test results from all sources proposed to be blended;
 - d. Projected contaminant levels that will result from blending that show both best-case and worst-case scenarios;
 - e. Identified techniques, and any other information requested by the Department, that show how the blending plan will produce water that will comply with MCLs.
2. The public water system has obtained the Department's written approval for a monitoring program designed to verify continued compliance with MCLs at all subsequent downstream service connections. This program shall include monitoring on at least a quarterly basis of both of the following:
 - a. All sources contributing to the blend; and
 - b. Blended water to ensure that the provisions of this Section are met.

B. A public water system shall submit an amended blending plan to the Department to confirm that the new blend achieves compliance with MCLs whenever sources are added to or removed from service or the relative flow rates from blended sources are changed in a way that changes the blend.

Historical Note

Former Section R9-8-221 repealed, new Section R9-8-221 adopted effective May 26, 1978 (Supp. 78-3). Correction, subsection (D), paragraph (2), subparagraph (b), drinking water standard for silvex, should read 0.01 mg/l as amended effective May 26, 1978 (Supp. 82-3). Amended subsection (D) effective November 2, 1982 (Supp. 82-6). Amended effective January 6, 1984 (Supp. 84-1). Former Section R9-8-221 renumbered without change as Section R18-4-221 (Supp. 87-3). Amended and new subsections (F) and (G) added effective June 30, 1989 (Supp. 89-2). Section repealed, new Section adopted effective August 8, 1991 (Supp. 91-3). Section repealed, new Section adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-222. Use of Point-of-Entry or Point-of-Use Treatment Devices

A. A public water system may use a point-of-use treatment device to achieve compliance with a MCL, provided that the point-of-use treatment device meets the requirements of 42 U.S.C. 300g-1(b)(4)(E)(ii) (2001), and the requirements listed under subsections (B)(1) through (B)(6).

B. A public water system may use a point-of-entry treatment device to achieve compliance with a MCL if the public water system meets all of the following requirements:

1. The public water system develops a monitoring plan for the treatment device and obtains the Department's written approval of the monitoring plan before a point-of-entry treatment device is installed. The monitoring plan shall provide reasonable assurance that the treatment device provides health protection equivalent to that provided by central water treatment.
 2. The design of the point-of-entry treatment device is approved, in writing, by the Department.
 3. The public water system operates and maintains the point-of-entry treatment device.
 4. The microbiological safety of water that is treated by a point-of-entry treatment device is maintained at all times. The design and application of the treatment device shall consider the tendency for increase in heterotrophic bacteria concentrations in water treated with activated carbon. The Department may require frequent backwashing, post-contactor disinfection, or HPC monitoring to ensure that the microbiological safety of water is not compromised.
 5. The public water system installs a sufficient number of point-of-entry treatment devices to buildings connected to the public water system so that every person served by the public water system is protected. Every building connected to the public water system shall be subject to treatment and monitoring.
 6. The rights and responsibilities of persons served by the public water system convey with title upon the sale of property.
- C. A public water system that uses a point-of-entry treatment device or a point-of-use treatment device as a condition for receiving a variance or an exemption shall meet the requirements listed under subsection (B).

Historical Note

Former Section R9-8-222 repealed, new Section R9-8-222 adopted effective May 26, 1978 (Supp. 78-3). Amended effective January 6, 1984 (Supp. 84-1). Former Section R9-8-222 renumbered without change as Section R18-4-222 (Supp. 87-3). Amended and new subsections (C) and (D) added effective June 30, 1989 (Supp. 89-2). Section repealed, new Section adopted effective August 8, 1991 (Supp. 91-3). Section repealed, new Section adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-223. Use of Bottled Water

A. A public water system may use bottled water on a temporary basis to avoid an unreasonable risk to health. A public water system shall not use bottled water to achieve compliance with a MCL.

B. If a public water system uses bottled water to avoid an unreasonable risk to health, the public water system is responsible for the provision of sufficient quantities of bottled water to every person served by the public water system via door-to-door bottled water delivery.

C. A public water system that uses bottled water as a condition for receiving a variance or an exemption shall comply with the following:

1. The public water system shall develop and put in place a monitoring program approved by the Department that provides reasonable assurances that the bottled water meets applicable MCLs. The public water system shall monitor a representative sample of the bottled water to determine compliance with applicable MCLs during the first three-month period that it supplies the bottled water to the public and annually thereafter. Results of the bottled water monitoring program shall be provided to the Department annually; or
2. The public water system shall receive a certification from the bottled water company that the bottled water supplied has been taken from an "approved source" as defined in 21 CFR 129.3(a); the bottled water company has conducted monitoring in accordance with 21 CFR 129.80(g)(1) through (3); and the bottled water does not exceed any MCLs or quality limits as set out in

21 CFR 165.110, 21 CFR 110, and 21 CFR 129. The public water system shall provide the certification to the Department in the first quarter after it supplies bottled water and annually thereafter. The Department may waive the certification requirements prescribed in this subsection if an approved monitoring program is already in place in another state; and

3. The public water system is fully responsible for the provision of sufficient quantities of bottled water to every person served by the public water system via door-to-door bottled water delivery.

Historical Note

Former Section R9-8-223 repealed, new Section R9-8-223 adopted effective May 26, 1978 (Supp. 78-3). Amended effective August 7, 1979 (Supp. 79-4). Amended subsection (D), paragraph (4) effective November 2, 1982 (Supp. 82-6). Amended effective January 6, 1984 (Supp. 84-1). Former Section R9-8-223 renumbered without change as Section R18-4-223 (Supp. 87-3). Amended and a new subsection (F) added effective June 30, 1989 (Supp. 89-2). Section repealed, new Section adopted effective August 8, 1991 (Supp. 91-3). Section repealed, new Section adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-224. The Monitoring Assistance Program

- A. A public water system that serves 10,000 or fewer persons shall participate in the monitoring assistance program. Within 60 days after receiving notice of participation in the monitoring assistance program, a public water system that determines that it serves more than 10,000 persons shall substantiate its determination by submitting that portion of the most recent census provided by the Arizona Department of Economic Security, Research Administration, Population Statistics Unit that supports the public water system's determination.
- B. A public water system that is not obligated to participate in the monitoring assistance program may elect to participate in the monitoring assistance program if the owner of the public water system:
1. Notifies the Department in writing of the public water system's intention to participate in the monitoring assistance program,
 2. Agrees to participate in the monitoring assistance program for a minimum of three years, and
 3. Pays the fees required by R18-4-225. Subject to payment of the required fees, the public water system's participation shall begin at the start of the next full calendar year of a compliance period.
- C. Under the monitoring assistance program, a contractor shall collect, transport, and analyze water samples from a participating public water system. The contractor, or a party designated by the contractor, shall monitor for the chemicals listed below:
1. All inorganic chemicals (IOCs) listed in R18-4-206, R18-4-207, R18-4-209, R18-4-402, and R18-4-403;
 2. All volatile organic chemicals (VOCs) listed in R18-4-211;
 3. All synthetic organic chemicals (SOCs) listed in R18-4-215; and
 4. Radiochemicals required by R18-4-217.
- D. A contractor shall deliver copies of monitoring analysis results to the owner of the public water system and to the Department.
- E. Although a contractor performs the monitoring when a public water system participates in the monitoring assistance program, nothing in this Section changes the party responsible for compliance with the public notice requirements of R18-4-105.
- F. An owner of a public water system shall notify the Department by July 1 of each year of:
1. The owner's name, current mailing address, and phone number;
 2. The population currently served by the public water system;
 3. The public water system identification number; and
 4. The number of meters and service connections currently in the public water system.
- G. A public water system that participates in the monitoring assistance program shall not deny a contractor access to or restrict a contractor's access to the public water system or prevent a contractor from collecting a sample covered under the monitoring assistance program.

Historical Note

Former Section R9-224 repealed, new Section R9-8-224 adopted effective May 26, 1978 (Supp. 78-3). Amended effective January 6, 1984 (Supp. 84-1). Former Section R9-8-224 renumbered without change as Section R18-4-224 (Supp. 87-3). Amended effective June 30, 1989 (Supp. 89-2). Former Section R18-4-224 repealed effective August 8, 1991 (Supp. 91-3). New Section adopted effective December 8, 1998 (Supp. 98-4). Amended by final rulemaking at 7 A.A.R. 5067, effective October 16, 2001 (Supp. 01-4).

R18-4-225. Fees for the Monitoring Assistance Program

- A. The Department shall assess, and a public water system participating in the monitoring assistance program shall pay, the following annual fees, subject to adjustments referenced in subsection (B):
1. An annual fee of \$250; and
 2. A unit fee of \$2.57 per meter or service connection.
- B. If the monitoring assistance fund has a surplus after execution of the previous year's contract, any surplus in excess of two hundred thousand dollars in any year shall be used to reduce future fees for public water systems that paid annual fees in the

previous compliance period, in a manner consistent with the program invoicing system. The first compliance period that a public water system participates in the monitoring assistance program, the public water system shall pay the full amount of annual fees due under this Section, not subject to a fee reduction resulting from a surplus in the monitoring assistance fund from a prior compliance period.

C. If a public water system serving 10,000 or fewer persons at the beginning of a compliance period increases service during the compliance period so that the public water system serves more than 10,000 persons annually, the public water system may elect to cease participation in the monitoring assistance program under the following conditions:

1. If the monitoring assistance program has already conducted monitoring for the public water system during the compliance period, the public water system shall remain in the monitoring assistance program, and pay annual fees, for the remainder of the compliance period.
2. If the monitoring assistance program has not conducted monitoring for the public water system during the compliance period, the public water system may cease participating in the monitoring assistance program, and if so, the Department shall refund any monitoring fees paid by the public water system during the compliance period.

Historical Note

Adopted effective May 26, 1978 (Supp. 78-3). Former Section R9-8-225 renumbered without change as Section R18-4-225 (Supp. 87-3). Former Section R18-4-224 repealed effective August 8, 1991 (Supp. 91-3). New Section adopted effective December 8, 1998 (Supp. 98-4). Amended by final rulemaking at 7 A.A.R. 5067, effective October 16, 2001 (Supp. 01-4).

R18-4-226. Collection and Payment of Fees

- A. The Department shall mail an invoice for fees annually to the owner of a public water system participating in the monitoring assistance program. The owner of the public water system shall pay the invoiced amount to the Department, at the address listed on the invoice, by the indicated due date.
- B. The Department shall make refunds or billing corrections for a public water system that demonstrates an error in the amount billed. The owner of a public water system shall send a written request for a refund or correction to the Department, at the address on the invoice, within 90 days of the invoice date.
- C. The Department may verify the number of meters and service connections of a participating public water system.
- D. The Department shall not waive fees prescribed by R18-4-225.
- E. The owner of a public water system that fails to pay fees assessed by the Department in a timely manner shall be subject to the penalties listed in A.R.S. § 49-354. Failure to notify the Department of the owner's current mailing address does not relieve the owner of a public water system from liability for penalties.

ARTICLE 3. TREATMENT TECHNIQUES

R18-4-301. Surface Water Treatment

- A. A surface water system shall provide filtration and disinfection which reliably achieves:
 1. At least a 99.9% (3-log) removal and inactivation of *Giardia lamblia* cysts between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the 1st customer; and
 2. At least a 99.99% (4-log) removal and inactivation of viruses between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the 1st customer.
- B. A surface water system shall be considered to be in compliance with the *Giardia lamblia* and virus removal and inactivation requirements prescribed in subsection (A) if the system provides filtration as prescribed by R18-4-302 and disinfection as prescribed in R18-4-303.
- C. A surface water system shall provide filtration and disinfection by June 29, 1993. A public water system with a source that is determined to be groundwater under the direct influence of surface water shall provide filtration and disinfection by June 29, 1993, or within 18 months of the date that the Department determines that the groundwater is under the direct influence of surface water, whichever is later. Failure to provide filtration and disinfection by the date specified in this subsection is a treatment technique violation.
- D. A surface water system which has not installed filtration shall comply, before filtration is installed, with the interim maximum contaminant level and monitoring requirements for turbidity prescribed at R18-4-204 and any interim disinfection requirements prescribed by the Department that the Department considers necessary to protect public health.
- E. Variances or exemptions from treatment technique requirements related to filtration and disinfection are not allowed.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2).

R18-4-301.01. Groundwater Under the Direct Influence of Surface Water

- A. The Department suspects the following sources to be groundwater under the direct influence of surface water:
 1. A spring;

2. An infiltration gallery;
 3. A radial well collector, Ranney well, or horizontal well;
 4. A well that is less than 500 feet from a surface water, and:
 - a. The Department conducts a vulnerability assessment and determines that the source is vulnerable to direct surface water influence, or
 - b. The Department cannot assess the vulnerability of the groundwater source to direct surface water influence because of a lack of information or the uncertainty of available information on the local hydrogeology or well construction characteristics;
 5. A shallow well with perforations or well screens that are less than 50 feet below the ground surface;
 6. A hand-dug or auger-bored well without a casing;
 7. A groundwater source for which turbidity data is available that shows that the groundwater violates an interim MCL for turbidity;
 8. A groundwater source for which data is available that shows that total coliform, fecal coliform, or E. Coli are present in untreated groundwater from the source that are not related to new well development, source modification, repair, or maintenance; and
 9. Any groundwater source if the temperature of the groundwater fluctuates 15% to 20% from the mean groundwater temperature over the course of a year or if changes in the temperature of the groundwater correlate to similar changes in the temperature of surface water.
- B. The Department shall conduct a sanitary survey of each public water system that it suspects is using a groundwater source under the direct influence of surface water.
- C. The Department shall provide written notice to a public water system that the Department suspects a groundwater source is under the direct influence of surface water. A public water system may submit information to the Department to show that a groundwater source is not under the direct influence of surface water. Information that is submitted to show that a suspect groundwater source is not under the direct influence of surface water shall be prepared by a qualified professional, such as a professional engineer registered in Arizona, registered geologist, water system operator, or hydrogeologist. The Department shall review any information submitted by a qualified professional to show a suspect groundwater source is not under the direct influence of surface water and determine if the source remains suspect within 90 days after receipt of the information.
- D. If a groundwater source continues to be suspect after the analyses required in subsections (A) through (C), the Department may require a public water system that is suspected of using a groundwater source that is under the direct influence of surface water to conduct Microscopic Particle Analysis (MPA) monitoring of the groundwater source. A public water system may request that the Department require an alternative method to determine whether a groundwater source is under the direct influence of surface water. An alternative method to determine whether a groundwater source is under the direct influence of surface water shall be approved by ADHS under R9-14-610.
- E. A public water system shall conduct MPA monitoring as follows:
1. Each sample shall be representative of the groundwater source. A public water system shall not take a sample of blended water or a sample of water from the distribution system.
 2. Each sample shall be collected and analyzed according to the procedures prescribed in the "Consensus Method for Determining Groundwaters Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA)," EPA 910/9-92-029, United States Environmental Protection Agency, Environmental Services Division, Manchester Environmental Laboratory, 7411 Beach Dr. E., Port Orchard, WA 98366, October 1992 (and no future editions or amendments), which is incorporated by reference and on file with the Office of the Secretary of State and the Department.
 3. The Department shall schedule MPA monitoring at a time when the groundwater source is most susceptible to direct surface water influence.
 4. The Department shall use the MPA risk ratings in Table 1 to determine whether groundwater is under the direct influence of surface water.
 - a. If the MPA risk rating of the initial sample indicates a high or moderate risk of direct surface water influence, the public water system shall collect a second sample for MPA at the same location on a date scheduled by the Department. If the MPA risk rating of the second sample indicates a high or moderate risk of direct surface water influence, the Department shall determine that the groundwater is under the direct influence of surface water. If the risk rating of the second sample indicates a low risk of direct surface water influence, the public water system shall collect a third sample for MPA at the same location on a date scheduled by the Department. If a third sample is taken, the Department shall determine whether the groundwater is under the direct influence of surface water under subsection (E)(4)(c).
 - b. If the MPA risk rating of the initial sample indicates a low risk of direct surface water influence, the public water system shall collect a second sample for MPA at the same location on a date scheduled by the Department. If the MPA risk rating of the second sample indicates a low risk of direct surface water influence, the Department shall determine that the groundwater is not under the direct influence of surface water. If the MPA risk rating of the second sample indicates a high or moderate risk of direct surface water influence, the public water system shall collect a third sample for MPA at the same location on a date

scheduled by the Department. If a third sample is taken, the Department shall determine whether the groundwater is under the direct influence of surface water under subsection (E)(4)(c).

c. If a third sample is required and the MPA risk rating of the third sample indicates a high or moderate risk of direct surface water influence, the Department shall determine that the groundwater is under the direct influence of surface water. If the MPA risk rating of the third sample indicates a low risk of direct surface water influence, the Department shall determine that the groundwater is not under the direct influence of surface water.

F. If the Department determines a source to be groundwater under the direct influence of surface water under subsection (E) and a public water system demonstrates to the Department that it is feasible to take corrective action to prevent direct surface water influence, the Department shall establish a schedule of compliance for the public water system to take corrective action instead of requiring installation of filtration and disinfection treatment. A schedule of compliance to take corrective action shall require:

1. Completion of corrective action no later than 18 months after receipt of the initial MPA monitoring results, and
2. A second round of MPA monitoring to determine whether the source is under the direct influence of surface water after completion of the corrective action.

G. Except as provided in subsection (F), a public water system with a source that the Department determines to be groundwater under the direct influence of surface water shall provide filtration required in R18-4-302 and disinfection required in R18-4-303 within 18 months after the date that the Department makes the final determination that the groundwater is under the direct influence of surface water.

H. The Department shall provide a written notice to a public water system of a final determination that a groundwater source is under the direct influence of surface water. The notice shall contain the following information:

1. A statement that the Department's determination that a groundwater source is under the direct influence of surface water is an "appealable agency action" as defined in A.R.S. § 41-1092(3); and
2. Notice that the public water system may request an informal settlement conference with the Department under the Uniform Administrative Appeal Procedures in A.R.S. Title 41, Chapter 6, Article 10.

I. A public water system may appeal a final determination that a groundwater source is under the direct influence of surface water by serving notice of appeal with the Department under the Uniform Administrative Appeals Procedures in A.R.S. Title 41, Chapter 6, Article 10. A public water system shall file notice of appeal with the Department within 30 days after receiving notice of the Department's determination that a groundwater source is under the direct influence of surface water. The Department shall notify the Office of Administrative Hearings which shall schedule a hearing on the appeal within 60 days after the date that notice of appeal is filed with the Department. Hearings shall be conducted according to the Uniform Administrative Appeals Procedures in A.R.S. Title 41, Chapter 6, Article 10.

Historical Note

New Section adopted by final rulemaking at 5 A.A.R. 1686, effective April 19, 1999 (Supp. 99-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

Table 1. Decision Matrix for Determining Groundwater Under the Direct Influence of Surface Water

Initial Sample MPA Risk Rating	Second Sample MPA Risk Rating	Third Sample MPA Risk Rating	Groundwater Under the Direct Influence of Surface Water
High	High or Moderate		Yes
High	Low	High or Moderate	Yes
High	Low	Low	No
Moderate	High or Moderate		Yes
Moderate	Low	High or Moderate	Yes
Moderate	Low	Low	No
Low	High or Moderate	High or Moderate	Yes
Low	High or Moderate	Low	No
Low	Low		No

Historical Note

New Table made by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-302. Filtration

A. A surface water system shall treat water by filtration.

B. Conventional or direct filtration: The turbidity of filtered water shall be ≤ 0.5 NTU in at least 95% of the measurements taken each month. The turbidity of filtered water shall not exceed 5 NTUs.

- C. Slow sand filtration: The turbidity of filtered water shall be ≤ 1 NTU in at least 95% of the measurements taken each month. The turbidity of filtered water shall not exceed 5 NTUs.
- D. Diatomaceous earth filtration: The turbidity of filtered water shall be ≤ 1 NTU in at least 95% of the measurements taken each month. The turbidity of filtered water shall not exceed 5 NTUs.
- E. Other filtration technologies: A surface water system may use a filtration technology other than conventional filtration, direct filtration, slow sand filtration, or diatomaceous earth filtration if the water supplier demonstrates to the Department, through pilot plant studies or other means, that the filtration technology, in combination with disinfection, consistently achieves a 99.9% (3-log) removal and inactivation of *Giardia lamblia* cysts and a 99.99% (4-log) removal and inactivation of viruses. The turbidity of filtered water shall be ≤ 1 NTU in at least 95% of the measurements taken each month. The turbidity of filtered water shall not exceed 5 NTUs.
- F. Frequency of turbidity monitoring: A surface water system shall take a grab sample and measure the turbidity of filtered water at least once every 4 hours that a water treatment plant is operating or monitor turbidity continuously. If a surface water system continuously monitors the turbidity of filtered water, the water supplier shall calibrate its turbidity monitoring equipment regularly in accordance with the manufacturer's specifications.
- G. Location of turbidity monitoring: A surface water system shall monitor the turbidity of filtered water at 1 of the following locations:
1. Combined filter effluent prior to entry into a clearwell,
 2. Clearwell effluent,
 3. Water treatment plant effluent, or
 4. Another location that is approved by the Department.
- H. Reduced turbidity monitoring: Upon the written request of a water supplier, the Department may reduce the frequency of grab sampling for turbidity if the Department determines that less frequent turbidity monitoring is sufficient to indicate effective filtration performance. A Department decision to reduce turbidity monitoring shall be in writing. The Department may reduce turbidity monitoring as follows:
1. The Department may reduce the frequency of grab sampling by a surface water system using slow sand filtration or a filtration technology other than conventional filtration, direct filtration, or diatomaceous earth filtration to once per day;
 2. The Department may reduce the frequency of grab sampling by a surface water system that serves 500 or fewer persons to once per day, regardless of the type of filtration used.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3).

R18-4-303. Disinfection

- A. A surface water system shall provide disinfection sufficient to ensure that the total treatment processes of the system achieve at least a 99.9% (3-log) inactivation and removal of *Giardia lamblia* cysts and at least a 99.99% (4-log) inactivation and removal of viruses.
- B. The residual disinfectant concentration in water entering the distribution system (measured as free chlorine, combined chlorine, or chlorine dioxide) shall be not less than 0.2 mg/L for more than 4 consecutive hours.
1. A surface water system that serves more than 3,300 persons per day shall continuously monitor the residual disinfectant concentration in water entering the distribution system. If there is a failure of the continuous monitoring equipment, a surface water system shall take grab samples every 4 hours to monitor residual disinfectant concentration. A surface water system shall repair or replace the continuous monitoring equipment within 5 days of initial failure.
 2. A surface water system that serves 3,300 or fewer persons per day may take grab samples to monitor the residual disinfectant concentration in water entering the distribution system instead of continuous monitoring.
 - a. The surface water system shall sample each day at the following frequency:
- | | |
|----------------|----------------|
| System size | Number of grab |
| by population | samples / day |
| 500 or less | 1 |
| 501 to 1,000 | 2 |
| 1,001 to 2,500 | 3 |
| 2,501 to 3,300 | 4 |
- 1 Grab samples shall not be taken at the same time. Sampling intervals are subject to Department review and approval.
 - b. If the residual disinfectant concentration in a grab sample is < 0.2 mg/L, a surface water system shall increase the frequency of grab sampling to once every 4 hours. The surface water system shall continue to take a grab sample every 4 hours until the residual disinfectant concentration in water entering the distribution system is ≥ 0.2 mg/L.
- C. The residual disinfectant concentration of water in the distribution system (measured as total chlorine, free chlorine, combined chlorine, or chlorine dioxide) shall be detectable in 95% or more of the samples each month for any 2 consecutive months that a surface water system serves water to the public.

1. A surface water system may measure the concentration of heterotrophic bacteria in water in the distribution system as heterotrophic plate count (HPC) instead of measuring the residual disinfectant concentration in water in the distribution system. Water in the distribution system with a heterotrophic bacteria concentration that is ≤ 500 /ml (measured as HPC) is deemed to have a detectable residual disinfectant concentration.

2. The water supplier shall calculate the value "V" in the following formula to determine whether there is a detectable residual concentration in water in the distribution system in 95% of the samples taken each month. The value "V" shall not exceed 5 in each month for any 2 consecutive months:

$$V = \frac{c+d+e}{a+b} \times 100$$

Where:

a = Number of instances the residual disinfectant concentration is measured;

b = Number of instances the residual disinfectant concentration is not measured but HPC is measured;

c = Number of instances the residual disinfectant concentration is measured but not detected and no HPC is measured;

d = Number of instances no residual disinfectant concentration is detected and the HPC is greater than 500/ml; and

e = Number of instances the residual disinfectant concentration is not measured and HPC is greater than 500/ml.

3. The residual disinfectant concentration in water in the distribution system shall be measured at the same sampling sites and at the same time as total coliform sampling.

D. A water supplier shall submit a treatment technique compliance study to the Department that demonstrates the total treatment processes of the surface water system achieve the Giardia lamblia and virus removal and inactivation rates prescribed in subsection (A). The water supplier shall submit an additional treatment technique compliance study if there is a change in the treatment process that may affect the percent removal or inactivation of Giardia lamblia cysts or viruses or an additional or different source is developed.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3).

R18-4-304. Groundwater Treatment

A. The Department may require a groundwater system to provide disinfection if any of the following occurs:

1. There is a violation of a maximum contaminant level for total coliform at a sampling point.
2. The groundwater system fails to comply with monitoring requirements for total coliform.
3. There is a reasonable probability of microbiological contamination of the groundwater.

B. The Department may require a groundwater system to monitor for turbidity to determine whether the groundwater system is under the direct influence of surface water.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2).

R18-4-305. Renumbered

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Section R18-4-305 renumbered to R18-4-306 by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-306. Lead and Copper; Applicability

The treatment technique requirements related to the control of lead and copper in drinking water that are prescribed in this Article apply to CWSs and NTNCWSs. These treatment technique requirements do not apply to TNCWSs.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Former Section R18-4-306 repealed; new Section R18-4-306 renumbered from R18-4-305 and amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-307. Lead and Copper; General Requirements

A. Except as provided in subsection (B), a large, medium, or small water system shall complete the following treatment technique steps within the indicated time periods:

1. A large water system shall conduct initial tap water monitoring for lead and copper for two consecutive six-month monitoring periods. A small or medium water system shall conduct initial tap water monitoring for lead and copper for two consecutive six-month monitoring periods or until the small or medium water system exceeds a lead or copper action level.

2. A large water system shall monitor for water quality parameters as prescribed in R18-4-311 for two consecutive six-month monitoring periods. A large water system shall conduct monitoring for water quality parameters in the same monitoring period that the large water system conducts initial tap water monitoring for lead and copper required in R18-4-310(B). A small or medium water system that exceeds the action level for lead or copper shall monitor for water quality parameters as prescribed in R18-4-311. A small or medium water system shall conduct monitoring for water quality parameters in the same monitoring period that the small or medium water system exceeds the action level.
 3. A large water system shall complete a corrosion control study within 18 months of the date that it completed initial tap water monitoring for lead and copper in R18-4-310(A)(1).
 4. A small or medium water system that exceeds the action level for lead or copper shall recommend optimal corrosion control treatment to the Department within six months after the small or medium water system exceeds the action level. Within one year after a small or medium water system exceeds the action level for lead or copper, the Department shall determine whether a corrosion control study is required, according to the criteria under R18-4-312(A). If the Department determines that a corrosion control study is required, the small or medium water system shall complete and submit the study to the Department within 18 months after the date that the Department determines that a study is required.
 5. The Department shall designate the optimal corrosion control treatment for the large, medium, or small water system within six months after receipt of the corrosion control study required in subsection (A)(3) or (A)(4).
 6. If the Department does not require a small or medium water system that exceeded the action level for lead or copper to perform a corrosion control study, the Department shall designate optimal corrosion control treatment for the system as follows:
 - a. For medium water systems, within 18 months after the medium water system exceeds an action level; or
 - b. For small water systems, within 24 months after the small water system exceeds an action level.
 7. A large, medium, or small water system shall install optimal corrosion control treatment within 24 months after the Department designates optimal corrosion control treatment.
 8. A large, medium, or small water system shall complete follow-up tap water monitoring for lead and copper and follow-up monitoring for water quality parameters, as prescribed in R18-4-313(C) through (F), within 36 months after the Department designates optimal corrosion control treatment.
 9. The Department shall review the large, medium, or small water system's installation of corrosion control treatment and designate water quality parameters for optimal corrosion control within six months after the large, medium, or small water system completes follow-up lead and copper tap water and water quality parameter monitoring.
 10. A large, medium, or small water system shall comply with the designated water quality parameters for optimal corrosion control and continue follow-up tap water monitoring for lead and copper and for water quality parameters as prescribed in R18-4-313(G) through R18-4-313(U).
- B. A large water system is deemed to have optimized corrosion control and is not required to complete the treatment technique steps identified in subsection (A) if the large water system satisfies one of the criteria in subsection (B)(2) or (B)(3). A small or medium water system is deemed to have optimized corrosion control and is not required to complete the treatment technique steps identified in subsection (A) if the small or medium water system satisfies one of the criteria in subsection (B)(1), (B)(2) or (B)(3). A large water system deemed to have optimized corrosion control under subsection (B)(2) or (B)(3) that has treatment in place, and a small or medium water system deemed to have optimized corrosion control under subsection (B)(1), (B)(2), or (B)(3) that has treatment in place, shall continue to operate and maintain optimal corrosion control treatment and shall meet any requirements that the Department determines appropriate to ensure optimal corrosion control treatment is maintained.
1. A small or medium water system does not exceed the action level for lead or copper for two consecutive six-month monitoring periods conducted in accordance with R18-4-309 and R18-4-310.
 2. A large, medium, or small water system demonstrates to the Department that it has conducted corrosion control activities that are equivalent to the corrosion control steps prescribed in subsection (A). The Department shall provide written notice to the large, medium, or small water system that explains the basis for its determination that the system's corrosion control steps are equivalent. The Department shall designate the water quality parameters that represent optimal corrosion control for the large, medium, or small water system in accordance with R18-4-313(G). A large, medium, or small water system deemed to have optimized corrosion control under this subsection shall operate in compliance with the optimal water quality control parameters designated by the Department in accordance with subsections R18-4-313(H) and (I) and continue to conduct lead and copper tap and water quality parameter monitoring in accordance with R18-4-313(H) and (O). A large, medium, or small water system shall provide the following information to the Department to support a request for an equivalency determination:
 - a. The results of all samples collected for lead, copper, pH, alkalinity, calcium, conductivity, water temperature, orthophosphate [when an inhibitor containing a phosphate compound is used], and silicate [when an inhibitor containing a silicate compound is used] before and after evaluation of corrosion control treatment.
 - b. A report that explains the test methods used by the large, medium, or small water system to evaluate the effectiveness of each of the following corrosion control treatments:
 - i. Alkalinity and pH adjustment,
 - ii. Calcium hardness adjustment, and

- iii. The addition of a phosphate- or silicate-based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test tap samples.
- c. The report shall include the results of all tests conducted and the basis for the large, medium, or small water system's selection of optimal corrosion control treatment.
- d. A report that explains how corrosion control treatment has been installed and how it is being maintained to ensure minimal lead and copper concentrations at taps.
- e. The results of tap water monitoring samples for lead and copper collected in accordance with requirements prescribed at R18-4-309 and R18-4-310. A large, medium, or small water system shall conduct tap water monitoring for lead and copper at least once every six months for at least one year after corrosion control treatment has been installed.
- 3. A large, medium, or small water system submits the following to the Department:
 - a. The results of tap water monitoring for lead and copper conducted under R18-4-309 and R18-4-310 and source water monitoring conducted under R18-4-314 that demonstrate the following for two consecutive six-month monitoring periods:
 - i. The difference between the 90th percentile for tap water lead and the highest source water lead concentration is less than 0.005 mg/L; and
 - ii. The copper action level is not exceeded; or
 - b. The results of tap water monitoring for lead and copper conducted under R18-4-309 and R18-4-310 and source water monitoring conducted under R18-4-314 that demonstrate the following:
 - i. The highest source water lead concentration is less than the method detection limit;
 - ii. The 90th percentile for tap water lead is less than or equal to 0.005 mg/L for two consecutive six-month monitoring periods; and
 - iii. The copper action level is not exceeded.
- 4. A large, medium, or small water system deemed to have optimized corrosion control under subsection (B)(3), and that no longer meets the requirements of that subsection, shall implement corrosion control treatment under the deadlines in subsection (A).
- 5. A large, medium, or small water system deemed to have optimized corrosion control under subsection (B)(3) shall continue tap water monitoring for lead and copper as specified in R18-4-310(E).
- 6. The Department may require a large, medium, or small water system deemed to have optimized corrosion control under subsection (B)(3) that changes its treatment or adds a new source to conduct additional monitoring or to take other action the Department deems appropriate to ensure that the large, medium, or small water system maintains minimal levels of corrosion in its distribution system.
- C. A small or medium water system that is required to complete the corrosion control steps prescribed in subsection (A) may cease completing the steps whenever the small or medium water system does not exceed the action level for lead or copper for each of two consecutive six-month monitoring periods and submits the analytical results to the Department. If a small or medium water system subsequently exceeds the action level for lead or copper during a monitoring period, the small or medium water system (or the Department) shall resume completion of the applicable corrosion control steps, beginning with the first step that was not previously completed in its entirety. The Department may require a small or medium water system to repeat steps previously completed if the Department determines that repeating a step is necessary to implement properly the corrosion control requirements of this Section. The Department shall notify the small or medium water system in writing if the Department determines that repeating a step is necessary and explain the basis for its decision.
- D. A small or medium water system deemed to have optimized corrosion control under subsection (B)(1) shall implement corrosion control treatment steps if the action level for lead or copper is exceeded.
- E. A large, medium, or small water system that exceeds the action level for lead or copper shall conduct source water monitoring as prescribed in R18-4-314.
- F. A large, medium, or small water system that exceeds the action level for lead shall comply with the public education requirements for lead prescribed in R18-4-316.
- G. A large, medium, or small water system that exceeds the action level for lead after implementation of applicable corrosion control treatment and source water treatment requirements shall comply with the lead service line replacement requirements prescribed in R18-4-315.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-308. Lead and Copper Action Levels

- A. The action level for lead is 0.015 mg/L. The action level for lead is exceeded if the concentration of lead in more than 10% of the tap water samples collected during any monitoring period [that is, the 90th percentile] is greater than 0.015 mg/L.
- B. The action level for copper is 1.3 mg/L. The action level for copper is exceeded if the concentration of copper in more than 10% of the tap water samples collected during any monitoring period [that is, the 90th percentile] is greater than 1.3 mg/L.

C. The 90th percentile lead and copper levels shall be computed as follows:

1. The results of all lead or copper samples taken during a monitoring period shall be placed in ascending order from the sample with the lowest concentration to the sample with the highest concentration. Each sampling result shall be assigned a number, ascending by single integers beginning with the number 1 for the sample with the lowest contaminant level. The number assigned to the sample with the highest contaminant level shall be equal to the total number of samples taken.
2. The number of samples taken during the monitoring period shall be multiplied by 0.9.
3. The contaminant concentration in the numbered sample yielded by the calculation in subsection (C)(2) is the 90th percentile contaminant level.
4. For a small water system that serves fewer than 100 persons and collects five samples per monitoring period, the 90th percentile is computed by taking the average of the highest and second highest concentrations.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-309. Lead and Copper; Targeted Sampling Sites and Materials Survey

A. A public water system shall collect tap water samples for lead and copper at locations that meet the following targeting criteria:

1. A CWS shall collect the required number of tap water samples from Tier 1 sampling sites. If a sufficient number of Tier 1 sampling sites do not exist or are inaccessible, then a CWS shall collect the remaining number of tap water samples from Tier 2 sampling sites. If a sufficient number of Tier 2 sampling sites do not exist or are inaccessible, then a CWS shall collect the remaining number of samples from Tier 3 sampling sites. A CWS with insufficient Tier 1, Tier 2, and Tier 3 sampling sites shall complete its sampling pool with representative sites throughout the distribution system.
 - a. Tier 1 sampling sites are single-family structures that meet any of the following requirements:
 - i. Contain lead pipes,
 - ii. Contain copper pipes with lead solder that were installed after 1982, or
 - iii. Are served by a lead service line.
 - b. If multiple-family residences comprise at least 20 percent of the structures served by a public water system, the public water system may include these types of structures in its sampling pool as Tier 1 sampling sites if the structures meet any of the requirements in subsections (A)(1)(a)(i) through (A)(1)(a)(iii).
 - c. Tier 2 sampling sites are buildings and multiple-family residences that meet any of the following requirements:
 - i. Contain lead pipes,
 - ii. Contain copper pipes with lead solder that were installed after 1982, or
 - iii. Are served by a lead service line.
 - d. Tier 3 sampling sites are single-family structures that contain copper pipes with lead solder that were installed before 1983.
 - e. For this subsection, a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the CWS.
 2. A NTNCWS shall collect the required number of tap water samples from Tier 1 sampling sites. If a sufficient number of Tier 1 sampling sites do not exist or are inaccessible, then a NTNCWS shall collect the remaining number of tap water samples from Tier 2 sampling sites. A NTNCWS with insufficient Tier 1 and Tier 2 sampling sites shall complete its sampling pool with representative sites throughout the distribution system.
 - a. Tier 1 sampling sites are buildings that meet any of the following requirements:
 - i. Contain lead pipes,
 - ii. Contain copper pipes with lead solder that were installed after 1982, or
 - iii. Are served by lead service lines.
 - b. Tier 2 sampling sites are buildings that contain copper pipes with lead solder that were installed before 1983.
 - c. For this subsection, a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the NTNCWS.
 3. A sampling site shall not include faucets that have point-of-entry or point-of-use treatment devices designed to remove inorganic contaminants.
 4. A CWS or NTNCWS that has a distribution system that contains lead service lines shall draw 50% of the tap water samples it collects during each monitoring period from sites that contain lead pipes, or copper pipes with lead solder, and 50% of the tap water samples from sites served by a lead service line. A CWS or NTNCWS that cannot identify a sufficient number of sites served by lead service lines to comply with the 50% requirement prescribed in this subsection shall collect first-draw tap water samples from all sites in the system that have been identified as being served by lead service lines.
- B. A public water system shall complete a materials survey of its distribution system to identify a pool of sampling sites that is sufficiently large to ensure that the public water system can collect the required number of tap water samples prescribed in R18-4-310(C). Each site from which a first-draw sample is collected shall be selected from the pool of sampling sites.

1. A public water system shall use the information on lead, copper, and galvanized piping that it is required to identify in subsection (B)(2) when conducting a materials survey. When an evaluation of the information collected under subsection (B)(2) is insufficient to locate the requisite number of sampling sites that meet the targeting criteria prescribed in subsection (A), the public water system shall review the sources of information listed in this subsection to identify a sufficient number of sampling sites. In addition, the public water system shall seek to collect this information if possible in the course of its normal operations (for example, checking service line materials when reading water meters or performing maintenance activities):
 - a. All plumbing codes, permits, and records in the files of the local, county, state, or federal building departments that indicate the plumbing materials that are installed within publicly and privately owned structures connected to the distribution system;
 - b. All inspections and records of the distribution system that indicate the material composition of the service connections that connect a structure to the distribution system; and
 - c. All existing water quality information, including the results of all prior analyses of the public water system or individual structures connected to the public water system, that indicates locations that may be particularly susceptible to high lead or copper concentrations.
2. A public water system shall identify whether any of the following construction materials are present in its distribution system when conducting a materials survey:
 - a. Lead from piping, solder, caulking, interior lining of distribution mains, alloys and home plumbing;
 - b. Copper from piping and alloys, service lines, and home plumbing;
 - c. Galvanized piping, service lines, and home plumbing;
 - d. Ferrous piping materials, such as cast iron and steel;
 - e. Asbestos cement pipes;
 - f. Vinyl lined asbestos cement pipe; and
 - g. Coal tar-lined pipes and tanks.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-310. Lead and Copper; Tap Water Monitoring

A. A public water system shall conduct tap water monitoring for lead and copper as follows:

1. A large water system shall conduct initial tap water monitoring for lead and copper for two consecutive six-month monitoring periods.
 2. A small or medium water system shall conduct initial tap water monitoring for lead and copper for two consecutive six-month monitoring periods. If a small or medium water system exceeds the action level for lead or copper in a monitoring period, the small or medium water system shall implement corrosion control treatment steps as prescribed in R18-4-307(A)(2) through (10).
- B. A public water system shall conduct initial tap water monitoring for lead and copper in the monitoring year designated by the Department.
- C. A public water system shall collect one tap water sample for lead and copper from at least the following number of sampling sites during each monitoring period:

System Size (Number of Persons Served)	Number of Sites
More than 100,000	100
10,001 to 100,000	60
3,301 to 10,000	40
501 to 3,300	20
101 to 500	10
100 or less	5

D. All tap water samples for lead and copper shall be first-draw samples, with the exception of lead service line samples collected under R18-4-315(D) and samples collected under subsection (D)(3).

1. A first-draw tap water sample for lead and copper shall be one liter in volume and shall have stood motionless in the plumbing system of each sampling site for at least six hours. A first-draw sample may be collected by the public water system or it may allow a resident to collect a first-draw sample after providing instructions to the resident on proper sampling procedures. To avoid the problem of residents handling nitric acid, acidification of first-draw samples may be done up to 14 days after the sample is collected. If a public water system allows residents to perform sampling, the public water system may not challenge the accuracy of the sampling results based on alleged errors in sample collection.

- a. A first-draw sample from residential housing shall be collected from the cold-water kitchen tap or cold-water bathroom sink tap.
- b. A first-draw sample from a non-residential building shall be collected at an interior tap from which water is typically drawn for consumption.
2. A public water system shall collect each first-draw tap water sample in subsequent monitoring periods from the same sampling site it collected a previous sample. If a public water system cannot gain entry to a sampling site in order to collect a follow-up tap water sample, the public water system may collect the follow-up tap water sample from another sampling site in its sampling pool as long as the new site meets the same targeting criteria and is within reasonable proximity of the original sampling site.
3. A NTNCWS, or a CWS that meets the criteria of R18-4-316(H)(1) and R18-4-316(H)(2), and does not have enough taps that can supply first-draw samples, as defined in subsection (D)(1), may use non-first-draw samples. The NTNCWS or CWS shall collect as many first-draw samples from appropriate taps as possible and identify sampling times and locations that would likely result in the longest standing time for the remaining sites. The NTNCWS or CWS shall report the information required in R18-4-104(E)(3) to the Department. Non-first-draw samples collected in place of first-draw samples shall be 1 liter in volume and shall be collected at an interior tap from which water is typically drawn for consumption.
- E. A public water system deemed to have optimized corrosion control under R18-4-307(B)(3) shall continue tap water monitoring for lead and copper at least once every three years. The public water system shall use the reduced number of sites and follow the sampling requirements listed in subsection (I).
- F. A small or medium water system that does not exceed the action level for lead and the action level for copper in the initial six-month monitoring period shall continue tap water monitoring for a consecutive six-month monitoring period. If the small or medium water system does not exceed the action level for lead and the action level for copper in two consecutive six-month monitoring periods the small or medium water system may reduce the frequency of tap water monitoring to once per year. The small or medium water system that conducts reduced monitoring shall use the reduced number of sites and follow the sampling requirements listed in subsection (I).
- G. A small or medium water system that does not exceed the action level for lead and the action level for copper for three consecutive years of monitoring may further reduce the frequency of tap water monitoring for lead and copper to once every three years. The small or medium water system that conducts reduced monitoring shall use the reduced number of sites and follow the sampling requirements listed in subsection (I).
- H. A small or medium water system that demonstrates for two consecutive six-month monitoring periods that the 90th percentile tap water lead level is less than or equal to 0.005 mg/L and the 90th percentile tap water copper level is less than or equal to 0.65 mg/L may reduce the frequency of tap water monitoring for lead and copper to once every three years. The small or medium water system that conducts reduced monitoring shall use the reduced number of sites and follow the sampling requirements listed under subsection (I).
- I. A public water system that samples annually or less frequently shall conduct tap water monitoring for lead and copper during the months of June, July, August, or September in the same calendar year, unless the Department has approved a different sampling period that is no longer than four consecutive months and represents a time of normal operation when the highest levels of lead are most likely to occur. For a NTNCWS that does not operate during June through September, and for which the period of normal operation when the highest levels of lead are most likely to occur is not known, the Department shall designate a period that represents a time of normal operation for the NTNCWS. A reduced monitoring site shall be representative of the sites required for standard monitoring identified in R18-4-309. The Department may specify sampling locations when a public water system is conducting reduced monitoring. A public water system that conducts reduced monitoring shall collect at least one sample from the following number of sites:

System Size (Number of Persons Served)	Number of Sites
More than 100,000	50
10,001 - 100,000	30
3,301 - 10,000	20
501 - 3,300	10
101 - 500	5
100 or less	5

- J. A small or medium water system conducting reduced tap water monitoring that exceeds the action level for lead or copper shall resume tap water monitoring at the frequency specified in subsection (A) and collect the number of samples specified in subsection (C). If the small or medium water system completes two subsequent consecutive six-month monitoring periods that meet the criteria in subsection (F), the small or medium water system may resume annual tap water monitoring for lead and copper at the reduced number of sites specified in subsection (I). The small or medium water system may resume triennial

monitoring for lead and copper at the reduced number of sites after it demonstrates through subsequent monitoring periods that it meets the criteria of either subsection (G) or (H).

K. The Department may require a small or medium water system that conducts reduced tap water monitoring that adds a new source of water or changes any water treatment to resume sampling at the frequency specified in subsection (A) and collect the number of samples specified in subsection (C).

L. The Department and the public water system shall consider the results of tap water monitoring for lead and copper conducted by the public water system in addition to the minimum requirements of this Section in making any determinations required by this Article, including calculating the 90th percentile lead and copper levels, treatment technique determination requirements, source water monitoring requirements, lead service line replacement requirements, and lead public education requirements.

M. A small or medium water system that exceeds the action level for lead or copper shall comply with the following:

1. Water quality parameter monitoring requirements prescribed at R18-4-311,
2. Source water monitoring requirements prescribed at R18-4-314, and
3. Lead public education requirements prescribed at R18-4-316 if the small or medium water system exceeds the action level for lead.

N. A large water system that exceeds the action level for lead or copper shall comply with the following:

1. Source water monitoring requirements prescribed at R18-4-314;
2. Lead public education requirements prescribed in R18-4-316 if the large water system exceeds the action level for lead; and
3. Lead service line replacement requirements prescribed in R18-4-315 if the large water system exceeds the action level for lead after installation of either corrosion control treatment or source water treatment, or both.

O. A public water system that exceeds the action level for lead shall offer to sample the tap water of any customer who requests that a sample be taken. The public water system is not required to pay for the collection or analysis of the sample. The public water system shall collect, or arrange for a third party to collect, the lead and copper sample. The sample shall be analyzed by a certified laboratory. Any sample that is collected under this subsection shall not be used for purposes of determining compliance.

P. A sample invalidated under this subsection does not count toward determining a lead or copper 90th percentile level or toward meeting the minimum monitoring requirements under subsections (C), (I), and R18-4-313(S).

1. The Department may invalidate a lead or copper tap water sample if at least one of the following conditions is met:
 - a. The laboratory establishes that improper sample analysis caused erroneous results,
 - b. The Department determines that the sample was taken from a site that did not meet the site selection criteria of R18-4-309,
 - c. The sample container was damaged in transit, or
 - d. There is substantial reason to believe that the sample was subject to tampering.
 2. The public water system shall report the results of all samples to the Department and all supporting documentation for samples the public water system believes should be invalidated.
 3. The Department shall document in writing its decision to invalidate a sample and the rationale for the decision. The Department shall not invalidate a sample solely because a follow-up sample result is higher or lower than that of the original sample.
 4. If after the invalidation of one or more samples, the public water system has too few samples to meet the minimum requirements of subsections (C), (I), and R18-4-313(S), the public water system shall collect replacement samples for any samples invalidated under this subsection. The public water system shall take a replacement sample as soon as possible, but not later than 20 days after the date the Department invalidates the sample or by the end of the applicable monitoring period, whichever occurs later. A replacement sample taken after the end of the applicable monitoring period shall not also be used to meet the monitoring requirements of a subsequent monitoring period. The public water system shall take a replacement sample at the same location as the invalidated sample or, if that is not possible, at a location that meets the same sampling criteria as the original sample. The public water system shall not use a location already used for sampling during the monitoring period.
- Q. A small water system that meets the criteria of this subsection may apply to the Department before the beginning of a monitoring period specified in this Section, to reduce the frequency of tap water monitoring for lead and copper under this Section to once every nine years (that is, a "full waiver") if it meets all the materials criteria specified in subsection (Q)(1) and all the monitoring criteria in subsection (Q)(2). A small water system that meets the criteria in subsection (Q)(1) and (Q)(2) only for lead, or only for copper, may apply to the Department for a waiver to reduce the frequency of tap water monitoring to once every nine years for that one contaminant (that is, a "partial waiver").
1. The small water system shall demonstrate that its distribution system and service lines and all drinking water supply plumbing, including plumbing conveying drinking water within all residences and buildings connected to the small water system, are free of either lead-containing materials or copper-containing materials, or both, as follows:
 - a. To qualify for a full waiver, or a waiver of the tap water monitoring requirements for lead (that is, a "lead waiver"), the small water system shall provide certification and supporting documentation to the Department that the small water system contains no plastic pipes that have lead plasticizers, or plastic service lines that contain lead plasticizers, and it is free of lead service lines, lead pipes, lead soldered pipe joints, and leaded brass or bronze alloy fittings and fixtures, unless the fittings and fixtures meet the specifications of ANSI/NSF Standard 61, Section 9.

- b. To qualify for a full waiver, or a waiver of the tap water monitoring requirements for copper (that is, a "copper waiver"), the small water system shall provide certification and supporting documentation to the Department that the small water system contains no copper pipes or copper service lines.
2. The small water system must have completed at least one six-month monitoring period of standard tap water monitoring for lead and copper at sites approved by the Department under R18-4-309 and at the number of sites required in subsection (C). The small water system must demonstrate that the 90th percentile levels for all monitoring periods conducted after the small water system became free of all lead-containing or copper-containing materials, or both, as appropriate, meet the following criteria:
- a. Lead levels. To qualify for a full waiver, or a lead waiver, the small water system shall demonstrate that the 90th percentile lead level does not exceed 0.005 mg/L.
- b. Copper levels. To qualify for a full waiver, or a copper waiver, the small water system shall demonstrate that the 90th percentile copper level does not exceed 0.65 mg/L.
3. The Department shall notify the small water system, in writing, of the Department's determination regarding the waiver, and explain the basis for its decision and prescribe any condition of the waiver. As a condition of the waiver, the Department may require the small water system to perform specific activities (for example, limited monitoring, periodic outreach to customers to remind them to avoid installation of materials that might void the waiver) to avoid the risk of elevated concentrations of lead or copper in tap water. The small water system shall continue tap water monitoring for lead and copper as required in subsections (A) through (K), as appropriate, until it receives written notification from the Department that the waiver has been approved.
4. A small water system with a full waiver shall conduct tap water monitoring for lead and copper in accordance with subsection (I) at least once every nine years, and provide the materials certification specified in subsection (Q)(1) for both lead and copper to the Department along with these tap water monitoring results.
5. A small water system with a partial waiver shall conduct tap water monitoring for the waived contaminant in accordance with subsection (I) at least once every nine years and provide the materials certification specified in subsection (Q)(1) pertaining to the waived contaminant along with the monitoring results. The small water system shall also continue to monitor for the contaminant that has not been waived under subsections (A) through (K), as appropriate.
6. If a small water system with a full or partial waiver adds a new source of water or changes any water treatment, the Department may require the small water system to add or modify waiver conditions (for example, require recertification that the small water system is free of either lead-containing or copper-containing materials, or both, or require an additional monitoring period) if the Department deems the modifications are necessary to address treatment or source water changes at the small water system.
7. A small water system with a full or partial waiver that becomes aware that it is no longer free of lead-containing or copper-containing materials (for example, as a result of new construction or repairs), shall notify the Department in writing not later than 60 days after becoming aware of the change. The small water system shall explain the circumstances resulting in the lead-containing or copper-containing materials being introduced into the small water system and what corrective action, if any, the small water system plans to remove these materials.
8. If the small water system continues to satisfy the requirements of subsection (Q)(4) to (Q)(7), the waiver will be renewed automatically, unless any of the conditions listed in (a) through (c) of this subsection occur. A small water system that has had its waiver revoked may reapply for a waiver when it again meets the appropriate materials and monitoring criteria of subsection (Q)(1) and (Q)(2).
- a. A small water system no longer satisfies the materials criteria of subsection (Q)(1)(a) or has a 90th percentile lead level greater than 0.005 mg/L.
- b. A small water system no longer satisfies the materials criteria of (Q)(1)(b) or has a 90th percentile copper level greater than 0.65 mg/L.
- c. The Department notifies the small water system, in writing, that the waiver has been revoked, and explains the basis for its decision.
9. A small water system that has had its full or partial waiver revoked by the Department is subject to the corrosion control treatment and lead and copper tap water monitoring requirements, as follows:
- a. If the small water system exceeds either the lead or copper action level, the small water system shall implement corrosion control treatment under the deadlines specified in R18-4-307(A), and any other applicable requirements of Sections R18-4-306 through R18-4-316.
- b. If the small water system meets both the lead and the copper action level, the small water system must monitor for lead and copper at the tap at least once every three years. The small water system shall use the reduced number of sites and follow the sampling requirements listed under subsection (I).

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-311. Lead and Copper; Water Quality Parameter Monitoring

A. A large water system shall monitor for water quality parameters. A small or medium water system shall monitor for water quality parameters only if the small or medium water system exceeds the action level for lead or copper. Water quality parameter monitoring includes both tap water monitoring and source water monitoring.

B. A public water system that monitors for water quality parameters shall collect samples for the following parameters:

1. pH (at the time of sample collection),
2. Alkalinity,
3. Calcium,
4. Conductivity,
5. Water temperature (at the time of sample collection),
6. Orthophosphate (when a phosphate-based corrosion inhibitor is used), and
7. Silica (when a silicate-based corrosion inhibitor is used).

C. The public water system shall take tap water samples for water quality parameters at sampling sites that are representative of water quality throughout the distribution system, taking into account the number of persons served, the different sources of water, the different treatment methods employed by the public water system, and seasonal variability. The public water system may take tap water samples for water quality parameters at the same locations as tap water samples for lead and copper or at the same sampling sites used for total coliform sampling. The public water system shall take source water samples for water quality parameters at sampling points as prescribed in R18-4-218(A) through R18-4-218(C).

D. A public water system that monitors for water quality parameters shall collect two tap water samples during each six-month monitoring period from the following number of sites:

System Size (Number of Persons Served)	Number of Sites for Water Quality Parameters
More than 100,000	25
10,001-100,000	10
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1
100 or less	1

E. A public water system that monitors for water quality parameters shall collect two source water samples at each sampling point as prescribed in R18-4-218(A) through (C) during each six-month monitoring period.

F. A large water system shall conduct tap water and source water monitoring for water quality parameters for two consecutive six-month monitoring periods. A small or medium water system shall monitor for water quality parameters only if the small or medium water system exceeds the action level for lead or copper. A small or medium water system shall complete tap water and source water monitoring for water quality parameters in the same monitoring period that the small or medium water system exceeds the action level for lead or copper.

G. A small or medium water system that exceeds the action level for lead or copper shall recommend installation of one or more of the corrosion control treatments listed in this subsection that the small or medium water system believes constitutes optimal corrosion control. The small or medium water system shall make a recommendation regarding the installation of optimal corrosion control treatment to the Department within six months after the action level was exceeded. The Department may require that a small or medium water system conduct additional monitoring for water quality parameters to assist the Department's review of the system's recommendation regarding optimal corrosion control treatment. Optimal corrosion control treatments include:

1. Alkalinity and pH adjustment,
2. Calcium hardness adjustment, and
3. The addition of a phosphate- or silicate-based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test tap samples.

H. The Department shall, in writing, either approve the optimal corrosion control treatment recommended by a small or medium water system, designate a different optimal corrosion control treatment from among those listed in subsection (G) for the small or medium water system, or require that the small or medium water system conduct a corrosion control study to identify the optimal corrosion control treatment for the system. If the Department makes the determination that a corrosion control study is not necessary, the Department shall designate the optimal corrosion control treatment for the system within the following time-frames:

1. For medium water systems, within 18 months after the medium water system exceeds the lead or copper action level, or
2. For small water systems, within 24 months after the small water system exceeds the lead or copper action level.

I. The Department and the public water system shall consider the results of any monitoring for water quality parameters conducted by a public water system in addition to the minimum requirements prescribed in this Section and Section R18-4-313 in making a recommendation regarding optimal corrosion control treatment, performance of a corrosion control study, designation of optimal corrosion control treatment or water quality parameters for optimal corrosion control, modification of an optimal corrosion control treatment decision, or reduced monitoring for lead and copper at the tap or for water quality parameters.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-312. Lead and Copper; Corrosion Control Studies

A. A large water system shall complete a corrosion control study within 18 months after the date that it completed initial tap water monitoring for lead and copper under R18-4-310(A)(1), unless the Department determines that the large water system has optimized corrosion control under R18-4-307(B). The Department may require that a small or medium water system that exceeds the action level for lead or copper perform a corrosion control study to identify the optimal corrosion control treatment for the small or medium water system. The Department shall consider factors such as water quality data submitted by the small or medium water system and the water treatment used by the small or medium water system when determining whether a system shall perform a corrosion control study. The Department's decision to require a corrosion control study shall be in writing.

1. The Department shall make a determination of whether a small or medium water system is required to perform a corrosion control study within one year after the small or medium water system exceeds the action level for lead or copper.
2. If the Department determines that a corrosion control study is necessary, the small or medium water system shall complete and submit the study to the Department within 18 months after the date that the Department determines that a study is necessary.

B. A public water system that conducts a corrosion control study shall evaluate the effectiveness of each of the following treatments and, if appropriate, combinations of the following treatments to identify optimal corrosion control treatment for that system:

1. Alkalinity and pH adjustment,
2. Calcium hardness adjustment, and
3. The addition of a phosphate- or silicate-based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test tap samples.

C. A public water system shall evaluate each of the corrosion control treatments listed in subsection (B) using any of the following:

1. Pipe rig test or pipe loop test;
2. Metal coupon tests;
3. Partial-system tests; or
4. Analyses based on documented analogous treatments with other systems of similar size, water chemistry, and distribution system configuration.

D. A public water system shall measure the following water quality parameters, in any tests conducted under subsection (C), before and after evaluating the corrosion control treatments listed in subsection (B):

1. Lead,
2. Copper,
3. pH (at the time of sample collection),
4. Alkalinity,
5. Calcium,
6. Conductivity,
7. Water temperature (at the time of sample collection),
8. Orthophosphate (when an inhibitor containing a phosphate compound is used),
9. Silicate (when an inhibitor containing a silicate compound is used).

E. A public water system shall identify all chemical or physical constraints that limit or prohibit the use of a particular corrosion control treatment and document the constraints with at least one of the following:

1. Data and documentation showing that a particular corrosion control treatment has adversely affected other water treatment processes when used by another public water system with comparable water quality characteristics, or
2. Data and documentation demonstrating that the public water system has previously attempted to evaluate a particular corrosion control treatment and has found that the treatment is ineffective or adversely affects other water quality treatment processes.

F. A public water system shall evaluate the effect of the chemicals used for corrosion control treatment on other water quality treatment processes.

G. On the basis of an analysis of the data generated during the corrosion control study, a public water system shall recommend to the Department, in writing, the optimal corrosion control treatment for the public water system. The public water system shall provide a rationale for its recommendation along with all supporting documentation required in this Section. If a small or medium water system completes a corrosion control study, the Department shall designate the optimal corrosion control treatment for that system within six months after the completion of the study. A small or medium water system shall install optimal corrosion control treatment within 24 months after the Department designates the treatment for the system.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-313. Lead and Copper; Corrosion Control Treatment

A. Based upon consideration of available information including, if applicable, a corrosion control study and the public water system's recommendation regarding optimal corrosion control treatment, the Department shall, in writing, either approve the corrosion control treatment recommended by a public water system or designate an alternative corrosion control treatment or treatments from among those listed in R18-4-312(B). When designating optimal corrosion control treatment, the Department shall consider the effects that additional corrosion control treatment will have on water quality parameters and on other water quality treatment processes. The Department shall provide written notice to a large, medium or small water system of its decision regarding optimal corrosion control treatment and explain the basis for its decision. If the Department requests additional information to aid its review, a public water system shall provide the information.

B. A public water system shall properly install and operate throughout its distribution system the optimal corrosion control treatment within 24 months after the date that the Department designates the treatment for the public water system under subsection (A).

C. Each public water system that installs optimal corrosion control treatment shall follow-up with tap water monitoring for lead and copper as specified in R18-4-310(C) and monitor for water quality parameters as specified in subsections (D), (E), and (F) for two consecutive six-month monitoring periods within 36 months after the date that the Department designates optimal corrosion control treatment for the public water system. A small or medium water system shall only conduct monitoring for water quality parameters during each six-month monitoring period in which the small or medium water system exceeds the lead or copper action level.

D. A public water system that installs optimal corrosion control treatment shall follow-up with tap water monitoring for water quality parameters at the number of sites prescribed in R18-4-311(D) in each six-month monitoring period. A public water system shall collect at least two tap water samples at each site for the following water quality parameters:

1. pH (at the time of sample collection);
2. Alkalinity;
3. Orthophosphate, when an inhibitor containing a phosphate compound is used;
4. Silica, when an inhibitor containing a silicate compound is used;
5. Calcium, when calcium carbonate stabilization is used as part of corrosion control.

E. A public water system that installs optimal corrosion control treatment shall conduct follow-up source water monitoring at each sampling point as prescribed in R18-4-218(A) through (C) in each six-month monitoring period. A public water system shall take at least one sample no less frequently than every two weeks (biweekly) at each sampling point for the following water quality parameters:

1. pH (at the time of sample collection);
2. When alkalinity is adjusted as part of optimal corrosion control, a reading of the dosage rate of the chemical used to adjust alkalinity, and the alkalinity concentration; and
3. When a corrosion inhibitor is used as part of optimal corrosion control, a reading of the dosage rate of the inhibitor used, and the concentration of orthophosphate or silica (whichever is applicable).

F. A groundwater system may limit monitoring for water quality parameters described in subsection (E) only to those sampling points prescribed in R18-4-218(A) through (C) that represent water quality and treatment conditions throughout the groundwater system. If water from an untreated groundwater source mixes with water from a treated groundwater source, the groundwater system shall monitor for water quality parameters both at representative sampling points receiving treatment and representative sampling points receiving no treatment. Before a groundwater system starts any limited monitoring under this subsection, the groundwater system shall provide the Department with written information identifying the selected representative sampling points and documentation, including information on seasonal variability, sufficient to demonstrate that the selected sites are representative of water quality and treatment conditions throughout the groundwater system.

G. The Department shall evaluate the results of follow-up monitoring for lead and copper and for water quality parameters to determine whether the public water system has properly installed and operated the optimal corrosion control treatment designated by the Department. After reviewing the results of all tap water monitoring for lead and copper and monitoring for water quality parameters, by the public water system, both before and after a public water system installs optimal corrosion

control treatment, the Department shall designate water quality parameters for the public water system that reflect optimal corrosion control treatment. The Department shall notify the public water system in writing of its determination regarding water quality parameters for optimal corrosion control treatment and shall explain the basis for its decision. The Department shall designate water quality parameters that reflect optimal corrosion control within six months after completion of follow-up monitoring. The Department shall designate, at a minimum, the following water quality parameters:

1. A minimum value or a range of values for pH measured at each point-of-entry into the distribution system;
2. A minimum pH value, measured in all tap samples. This value shall be equal to or greater than 7.0, unless the Department determines that meeting a pH level of 7.0 is not technologically feasible or is not necessary for the public water system to optimize corrosion control;
3. If a corrosion inhibitor is used, a minimum concentration or a range of concentrations for the inhibitor, measured at each point-of-entry into the distribution system and in all tap samples, that the Department determines is necessary to form a passivation film on the interior walls of the pipes of the distribution system;
4. If alkalinity is adjusted as part of optimal corrosion control treatment, a minimum concentration or a range of concentrations for alkalinity, measured at each point-of-entry into the distribution system and in all tap samples;
5. If calcium carbonate stabilization is used as part of corrosion control, a minimum concentration or a range of concentrations for calcium, measured in all tap samples;
6. The Department may designate values for additional water quality parameters that the Department determines reflect optimal corrosion control treatment for a public water system.

H. After the Department designates a range of values for water quality parameters that reflect optimal corrosion control treatment for a public water system under subsection (G), a large water system shall monitor for water quality parameters under subsections (D), (E), and (F) and determine compliance with the requirements of subsection (I) every six months, with the first 6-month period beginning on the date that the Department specifies the values for water quality parameters. A small or medium water system shall monitor for water quality parameters under subsections (D), (E), and (F) during each 6-month period specified in this subsection in which the small or medium water system exceeds the lead or copper action level. For a small or medium water system that is conducting lead and copper tap water monitoring on a reduced frequency when an action level is exceeded, the end of the 6-month period under this subsection shall coincide with the end of the reduced monitoring period under R18-4-310. Compliance with Department-designated optimal water quality parameter values shall be determined as specified in subsection (I).

I. A public water system that optimizes corrosion control shall continue to operate and maintain optimal corrosion control treatment, including maintaining water quality parameters at or above the minimum values or within the ranges designated by the Department under subsection (G), for all samples collected under subsections (H) through (N). Compliance with the requirements of this subsection shall be determined every six months, as specified in subsection (H). A public water system is out of compliance with the requirements of this subsection for a 6-month period if it has excursions for any Department-specified parameter on more than nine days during the period. An excursion occurs whenever the daily value for one or more of the water quality parameters measured at a sampling location is below the minimum value or outside the range designated by the Department. The Department shall calculate the daily values as follows, and may delete the result of an obvious sampling error from a calculation:

1. On a day when more than one measurement for the water quality parameter is collected at the sampling location, the daily value shall be the average of all results collected during the day regardless of whether they are collected through continuous monitoring, grab sampling, or a combination of both.
2. On a day when only one measurement for the water quality parameter is collected at the sampling location, the daily value shall be the result of that measurement.
3. On a day when no measurement is collected for the water quality parameter at the sampling location, the daily value shall be the daily value calculated on the most recent day on which the water quality parameter was measured at the sample site.

J. A public water system that maintains the range of values for the water quality parameters that reflects optimal corrosion control treatment designated by the Department under subsection (G) for two consecutive six-month monitoring periods conducted under subsection (H) may reduce the number of sites from which tap water samples for water quality parameters are collected. The public water system shall collect at least two tap water samples from the following number of sites during each six-month monitoring period:

System Size (Number of Persons Served)	Reduced Number of Sites for Water Quality Parameters
More than 100,000	10
10,001 to 100,000	7
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1

100 or less	1
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K. A public water system that maintains the range of values for the water quality parameters that reflects optimal corrosion control treatment designated by the Department under subsection (G) for three consecutive years of monitoring may reduce the frequency that it collects tap water samples specified in subsection (J) for water quality parameters from every six months to annually. A public water system that conducts annual monitoring shall collect tap water samples for water quality parameters evenly throughout the year so as to reflect seasonal variability.

L. A public water system that maintains the range of values for the water quality parameters that reflects optimal corrosion control treatment, designated by the Department under subsection (G), for three consecutive years of annual monitoring may reduce the frequency that it collects the number of tap water samples specified in subsection (J) for water quality parameters from annually to every three years. A public water system that conducts triennial monitoring shall collect tap water samples for water quality parameters evenly throughout the year so as to reflect seasonal variability.

M. A large water system may reduce the frequency that it collects tap water samples specified in subsection (J) for water quality parameters to every three years if it demonstrates the following for two consecutive monitoring periods:

1. That its 90th percentile for lead in tap water is less than or equal to 0.005 mg/L;
2. That its 90th percentile for copper in tap water is less than or equal to 0.65 mg/L; and
3. That it has maintained the range of values for the water quality parameters that reflects optimal corrosion control treatment designated by the Department under subsection (G). A large water system that conducts triennial monitoring shall collect tap water samples for water quality parameters evenly throughout the year so as to reflect seasonal variability.

N. A public water system that is conducting tap water monitoring for water quality parameters on an annual or triennial basis and fails to operate at or above the minimum value or within the range of values for the water quality parameters designated by the Department under subsection (G) for more than nine days in any 6-month period, as specified in subsection (I), shall resume tap water monitoring for water quality parameters in the distribution system at the number and frequency specified in subsection (H). After the public water system has completed two subsequent consecutive 6-month monitoring periods that meet the criteria of subsection (J), it may resume annual tap water monitoring for water quality parameters within the distribution system at the reduced number of sites specified in subsection (J). The public water system may resume triennial tap water monitoring for water quality parameters at the reduced number of sites after it demonstrates through subsequent monitoring periods that it meets the criteria of either subsection (L) or (M).

O. After the Department designates a range of values for water quality parameters that reflects optimal corrosion control treatment for a public water system, the public water system shall conduct tap water monitoring for lead and copper during each subsequent six-month monitoring period, with the first monitoring period to begin on the date that the Department designates the water quality parameters under subsection (G). The public water system shall collect the number of samples specified in R18-4-310(C).

P. A public water system that installs optimal corrosion control treatment and that maintains the range of values for water quality parameters that reflects optimal corrosion control treatment designated by the Department under subsection (G) for two consecutive six-month monitoring periods may reduce the frequency of tap water monitoring for lead and copper to once per year and reduce the number of samples taken if it receives written approval from the Department. The Department shall review monitoring, treatment, and other relevant information submitted by the public water system in accordance with R18-4-104, and shall notify the public water system, in writing, if the Department determines that the public water system is eligible to begin reduced monitoring. The Department shall review, and if appropriate, revise its determination when the public water system submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap water monitoring becomes available. A public water system that conducts reduced monitoring shall use the reduced number of sites and follow the sampling requirements listed under subsection (S).

Q. A public water system that maintains the range of values for the water quality parameters that reflects optimal corrosion control treatment designated by the Department under subsection (G) for three consecutive years of monitoring may reduce the frequency of tap water monitoring for lead and copper to once every three years if it receives written approval from the Department. The Department shall review monitoring, treatment, and other relevant information submitted by the public water system in accordance with R18-4-104, and shall notify the public water system, in writing, if the Department determines that the public water system is eligible to reduce the frequency of monitoring to once every three years. The Department shall review, and if appropriate, revise its determination when the public water system submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap water monitoring becomes available. A public water system that conducts reduced monitoring shall use the reduced number of sites and follow the sampling requirements listed under subsection (S).

R. A public water system that demonstrates for two consecutive six-month monitoring periods that the 90th percentile tap water lead level is less than or equal to 0.005 mg/L and the 90th percentile tap water copper level is less than or equal to 0.65 mg/L may reduce the frequency of tap water monitoring for lead and copper to once every three years. The public water system that conducts reduced monitoring shall use the reduced number of sites and follow the sampling requirements listed under subsection (S).

S. A public water system that samples annually or less frequently shall conduct tap water monitoring for lead and copper during the months of June, July, August, or September in the same calendar year, unless the Department has approved a different sampling period. The different sampling period shall be no longer than four consecutive months and must represent a time of normal operation where the highest levels of lead are most likely to occur. For a NTNCWS that does not operate during the months of June through September, and for which the period of normal operation where the highest levels of lead are most likely to occur is not known, the Department shall designate a period that represents a time of normal operation for the NTNCWS. A reduced monitoring site shall be representative of the sites required for standard monitoring identified in R18-4-309. The Department may specify sampling locations when a public water system is conducting reduced monitoring. A public water system conducting reduced monitoring shall collect at least one sample from the following number of sites:

System Size (Number of Persons Served)	Number of Sites
More than 100,000	50
10,001 - 100,000	30
3,301 - 10,000	20
501 - 3,300	10
500 or less	5

T. A public water system that is conducting tap water monitoring for lead and copper on an annual or triennial basis and fails to operate at or above the minimum value or within the range of values for the water quality parameters designated by the Department under subsection (G) for more than nine days in any 6-month period as specified in subsection (H) shall resume tap water monitoring for lead and copper at the frequency and number specified in subsection (O). A public water system may resume reduced tap water monitoring for lead and copper under the following conditions:

1. The public water system may resume annual tap water monitoring for lead and copper at the reduced number of sites specified in subsection (S) after it has completed two subsequent 6-month monitoring periods that meet the criteria of subsection (P) and the public water system has received written approval from the Department, or
2. The public water system may resume triennial tap water monitoring for lead and copper at the reduced number of sites specified in subsection (S) after it has conducted subsequent monitoring periods that meet the criteria of subsection (Q) or (R), and the public water system has received written approval from the Department.

U. The Department may require a public water system that conducts reduced tap water monitoring for lead and copper that adds a new source or changes any water treatment to:

1. Resume monitoring at the frequency specified in subsection (O) and collect the number of samples specified in R18-4-310(C), or
2. Increase water quality parameter monitoring.

V. Upon its own initiative or in response to a request by a public water system or other interested party, the Department may modify its determination regarding optimal corrosion control treatment or water quality control parameters for optimal corrosion control treatment. A request for modification shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The Department may modify its determination if it concludes that the change is necessary to ensure that the public water system continues to optimize corrosion control treatment. A revised determination shall be made in writing, set the new treatment requirements, explain the basis for the Department's decision, and provide an implementation schedule for completing the treatment modifications.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-314. Lead and Copper; Source Water Monitoring and Treatment

A. A public water system that exceeds the action level for lead or copper shall conduct source water monitoring for lead and copper.

B. Source water monitoring for lead and copper shall be conducted at sampling points as prescribed in R18-4-218(A) through (C). A public water system may composite samples in accordance with R18-4-219.

C. A public water system that exceeds the action level for lead or copper shall collect one sample from each sampling point within six months after the action level for lead or copper was exceeded.

D. Within six months after the action level for lead or copper was exceeded, the public water system shall make a written recommendation to the Department as to whether one of the source water treatments listed in subsection (G) is necessary. The public water system may recommend that no source water treatment be installed if the public water system demonstrates that source water treatment is not necessary to minimize lead or copper levels at taps.

E. The Department shall evaluate the results of all source water samples submitted by a public water system to determine if source water treatment is necessary to minimize lead or copper levels in water delivered to taps. The Department shall make a written determination regarding the necessity of source water treatment within six months after the public water system submits the source water monitoring results.

F. If the Department determines that a public water system is not required to install source water treatment, the public water system shall conduct source water monitoring at one of the following frequencies:

1. A groundwater system shall collect one source water sample at each sampling point for lead and copper once during each compliance period, beginning in the compliance period that the Department determines that source water treatment is not necessary.
2. A surface water system shall collect one source water sample at each sampling point for lead and copper annually. The first annual monitoring period shall begin on the date that the Department determines that source water treatment is not necessary.

G. If the Department requires installation of source water treatment, a public water system shall install treatment within 24 months after the date that the Department makes a determination that source water treatment is necessary. A public water system shall properly install and operate the source water treatment that is approved or designated by the Department. The Department shall either require installation and operation of the source water treatment recommended by the public water system or require the installation and operation of another source water treatment from among the following:

1. Ion exchange,
2. Reverse osmosis,
3. Lime softening, or
4. Coagulation and filtration.

H. The Department may request additional information from a public water system to aid in its source water treatment determination. If the Department requests additional information, a public water system shall provide the information by the date specified by the Department in its request. The Department shall notify a public water system, in writing, of its source water treatment determination and explain the basis for its decision.

I. A public water system that installs source water treatment shall complete follow-up tap water and source water monitoring for lead and copper within 36 months after the date that the Department determines that source water treatment is necessary. A public water system shall collect an additional source water sample from each sampling point as prescribed in R18-4-218(A) through (C) for two consecutive six-month monitoring periods. A public water system shall conduct tap water monitoring for two consecutive six-month monitoring periods. The public water system shall collect the number of tap water samples specified in R18-4-310(C).

J. The Department shall review a public water system's installation and operation of source water treatment and designate a maximum permissible source water level for lead and a maximum permissible source water level for copper for water entering the distribution system within six months after the completion of follow-up monitoring. The Department shall review the source water samples taken by the public water system both before and after the public water system installs source water treatment to determine if the public water system has properly installed and operated the source water treatment designated by the Department. Based upon its review, the Department shall designate a maximum permissible source water level for lead and a maximum permissible source water level for copper that reflect the contaminant removal capability of the source water treatment when it is properly operated and maintained. The Department shall provide written notice to the public water system and explain the basis for its decision.

K. A public water system shall comply with the Department-designated maximum permissible source water level for lead and the maximum permissible source water level for copper and continue source water monitoring. A public water system shall monitor at the following frequencies if the Department designates maximum permissible source water levels:

1. A groundwater system shall collect one sample from each sampling point once during each compliance period, beginning in the compliance period that the Department designates a maximum permissible source water level for lead and a maximum permissible source water level for copper.
2. A surface water system shall collect one sample annually from each sampling point. The first monitoring period shall begin on the date that the Department designates a maximum permissible source water level for lead and a maximum permissible source water level for copper.

L. A public water system shall maintain lead and copper levels below the maximum permissible source water levels designated by the Department at each sampling point. A public water system is out of compliance if the level of lead or copper at any sampling point is greater than the maximum permissible source water level designated by the Department.

M. A public water system is not required to conduct additional source water monitoring for lead or copper if tap water samples do not exceed the action level for that specific contaminant during the entire source water sampling period applicable to the public water system under subsections (F)(1) or (F)(2) or (K)(1) or (K)(2).

N. The Department may modify its source water treatment determination or designation of maximum permissible source water lead and maximum permissible source water copper concentrations for water entering the distribution system on its own initiative or in response to a written request by a public water system or other interested party. A request for modification by a

public water system or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The Department may modify its determination if it concludes that a change is necessary to ensure that lead and copper concentrations in source water are minimized. A revised determination shall be made in writing, set the new treatment requirements, explain the basis for the Department's decision, and provide an implementation schedule for completing the source water treatment modifications.

O. If a sample exceeds a maximum permissible source water level for lead or copper, the Department may require that the public water system take one confirmation sample at the same sampling point, as soon as possible but no later than two weeks after the initial sample was taken. If a Department-required confirmation sample is taken for lead or copper, the results of the initial and confirmation sample shall be averaged to determine compliance with the maximum permissible source water level. A public water system shall report all lead levels measured between 0.005 mg/L and the method detection limit as measured or as 0.0025 mg/L. A public water systems shall report all copper levels measured between 0.050 mg/L and the method detection limit as measured or as 0.025 mg/L. A public water systems shall report all lead and copper levels measured below the method detection limits for lead and copper as zero.

P. After the Department designates the maximum permissible source water levels for a public water system, the public water system may reduce source water monitoring as follows:

1. A groundwater system that demonstrates that water entering the distribution system has been maintained below the maximum permissible source water level for lead and the maximum permissible source water level for copper designated by the Department for three consecutive compliance periods may reduce the monitoring frequency for lead and copper to once during each compliance cycle.

2. A surface water system that demonstrates that water entering the distribution system has been maintained below the maximum permissible source water level for lead and the maximum permissible source water level for copper designated by the Department for three consecutive years may reduce the monitoring frequency to once during each compliance cycle.

3. A public water system that uses a new source is not eligible for reduced monitoring for lead or copper until concentrations in samples collected from the new source for three consecutive monitoring periods are below the maximum permissible source water levels designated by the Department for that specific contaminant.

Q. If the Department determines that a public water system does not need to install source water treatment, the public water system may reduce the frequency for lead and copper source water monitoring as follows:

1. If a groundwater system demonstrates that for three consecutive compliance periods in which monitoring was conducted under subsection (F) the concentration of lead in the source water is less than or equal to 0.005 mg/L and the concentration of copper in the source water is less than or equal to 0.65 mg/L, the source water monitoring frequency for lead and copper may be reduced to once during each compliance cycle.

2. If a surface water system demonstrates that for three consecutive years in which monitoring was conducted under subsection (F) the concentration of lead in the source water is less than or equal to 0.005 mg/L and the concentration of copper in the source water is less than or equal to 0.65 mg/L, the source water monitoring frequency for lead and copper may be reduced to once during each compliance cycle.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-315. Lead and Copper; Lead Service Line Replacement

A. A public water system that fails to meet the action level for lead in tap water samples after installing either corrosion control or source water treatment, or both, (whichever sampling occurs later) shall replace lead service lines in accordance with the requirements of this Section.

B. If a public water system is out of compliance for failure to install either corrosion control treatment or source water treatment by the date the public water system is required to conduct monitoring under R18-4-313(C) or R18-4-314(I), the Department shall require the public water system to replace the lead service lines if the public water system is not making satisfactory progress towards compliance under a schedule approved by the Department. The Department's decision to require a public water system to replace the lead service lines under this subsection shall be in writing.

C. A public water system shall replace annually at least 7% of the initial number of lead service lines in its distribution system. The initial number of lead service lines is the number of lead service lines in place when the replacement program begins. The public water system shall identify the initial number of lead service lines in its distribution system including an identification of the portion owned by the public water system, based upon a materials survey, including the materials survey required in R18-4-309(B), and relevant legal authorities (for example, contracts and local ordinances) regarding the portion owned by the public water system. The first year of lead service line replacement shall begin on the date that the action level for lead is exceeded after installation of either corrosion control treatment or source water treatment, or both.

D. A public water system is not required to replace an individual lead service line if the lead concentration in all samples collected from that line is less than or equal to 0.015 mg/L. Each lead service line sample shall be 1 liter in volume and shall

have stood motionless in the lead service line for at least six hours. Lead service line samples shall be collected in one of the following ways:

1. At a tap after flushing the volume of water between the tap and the lead service line. The volume of water that is flushed shall be calculated based on the interior diameter and length of the pipe between the tap and the lead service line;
2. Tapping directly into the lead service line; or
3. If the sampling site is a building constructed as a single-family residence, allowing the water to run until there is a significant change in temperature that would be indicative of water standing in the lead service line.

E. A public water system shall replace the portion of the lead service line that it owns. If the public water system does not own the entire lead service line, the public water system shall notify the owner of the line, or the owner's authorized agent, that the public water system will replace the portion of the service line that it owns and shall offer to replace the owner's portion of the line. A public water system is not required to bear the cost of replacing the privately owned portion of the line, nor is it required to replace the privately owned portion if the owner chooses not to pay the cost of replacing the privately owned portion of the line, or if replacing the privately owned portion would be precluded by state, local or common law. A public water system that does not replace the entire length of the service line also shall complete the following tasks.

1. At least 45 days before beginning the partial replacement of a lead service line, the public water system shall provide a notice to the residents of all buildings served by the line that explains that they may experience a temporary increase of lead levels in their drinking water, along with guidance on the measures consumers can take to minimize their exposure to lead. The Department may allow the public water system to provide this notice fewer than 45 days before beginning partial lead service line replacement if the replacement is in conjunction with emergency repairs. In addition, the public water system shall inform the residents served by the line that the public water system will, at the public water system's expense, collect a sample from each partially replaced lead service line that is representative of the water in the service line for analysis of lead content, under subsection (D), within 72 hours after the completion of the partial replacement of the service line. The public water system shall collect the sample and report the results of the analysis to the owner and the residents served by the line within three business days after receiving the results. Mailed notices postmarked within three business days after receiving the results shall be considered "on time."

2. The public water system shall provide the information required in subsection (E)(1) to the residents of individual dwellings by mail or by another method approved by the Department. If multi-family dwellings are served by the line, the public water system shall have the option to post the information at a conspicuous location.

F. The Department shall require a public water system to replace lead service lines on a faster schedule (that is, more than 7% annually), taking into account the number of lead service lines in the public water system, if a faster replacement schedule is feasible. The Department shall make this determination in writing and notify the public water system of its finding within six months after the public water system is triggered into lead service line replacement.

G. A public water system may cease replacing lead service lines whenever first-draw samples collected under R18-4-310(D) do not exceed the action level for lead for each of two consecutive monitoring periods and the public water system submits the results to the Department. If a first-draw tap water sample collected by the public water system thereafter exceeds the lead action level, the public water system shall resume replacing lead service lines.

H. A public water system shall report the following information to the Department to demonstrate compliance with the requirements of this Section:

1. Within 12 months after a public water system exceeds the action level for lead after installation of either corrosion control or source water treatment, or both, the public water system shall demonstrate in writing to the Department that it has conducted a materials survey, and include the information required in the initial materials survey conducted under R18-4-309(B), to identify the initial number of lead service lines in its distribution system and shall provide the Department with the system's schedule for replacing annually at least 7% of the initial number of lead service lines in its distribution system.
2. Within 12 months after a public water system exceeds the action level for lead after installation of either corrosion control or source water treatment, or both, and every 12 months thereafter, the public water system shall demonstrate to the Department in writing that the public water system has either:
 - a. Replaced in the previous 12 months at least 7% of the initial lead service lines (or a greater number of lead service lines specified by the Department under subsection (F)); or
 - b. Conducted sampling under subsection (D) that demonstrates that the lead concentration in each lead service line sample is less than or equal to 0.015 mg/L. In this case, the total number of lines replaced shall equal at least 7% of the initial number of lead lines in place when the lead service line replacement program began (or the percentage specified by the Department under subsection (F)).
3. The annual letter submitted to the Department under subsection (H)(2) shall contain the following information:
 - a. The number of lead service lines scheduled to be replaced during the previous year of the system's replacement schedule;
 - b. The number and location of each lead service line replaced during the previous year of the system's replacement schedule;
 - c. If measured, the water lead concentration and location of each lead service line sampled, the sampling method, and the date of sampling; and

d. Certification that all partial lead service line replacement activities required in subsection (E) have been completed, if applicable.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-316. Public Education Requirements for Lead

A. A CWS that exceeds the action level for lead and that is not already repeating public education tasks under subsection (C) or (J) shall, within 60 days after the action level for lead is exceeded, do all of the following:

1. Insert a notice on each customer's water utility bill that states in large print:
"Some Homes in this Community Have Elevated Lead Levels in Their Drinking Water. Lead Can Pose a Significant Risk to Your Health. Please Read the Enclosed Notice for Further Information."
 2. Include with each customer's water utility bill a notice that includes the text required in Appendix A.
 3. Provide the text required in Appendix A to the editorial departments of the major daily and weekly newspapers circulated throughout the community.
 4. Deliver pamphlets or brochures that contain the public education materials related to the health effects of lead, the steps that can be taken in the home to reduce lead exposure, and how to obtain more information on lead in drinking water that are specified in Appendix A, subsections (B), (D), and (E) to facilities and organizations, including the following:
 - a. Public schools or local school boards;
 - b. City or county health department or environmental quality departments;
 - c. Women, Infants, and Children [WIC] and Head Start programs if available;
 - d. Public and private hospitals and clinics;
 - e. Pediatricians;
 - f. Family planning clinics; and
 - g. Local welfare agencies.
 5. Submit a public service announcement to at least five radio and television stations with the largest audiences that broadcast to the community served by the CWS. The public service announcement shall contain the following language:
"Why should everyone want to know the facts about lead and drinking water? Because unhealthy amounts of lead can enter drinking water through the plumbing in your home. That's why I urge you to do what I did. I had my water tested for [insert free or \$ per sample]. You can contact the [insert the name of the city or public water system] for information on testing and on simple ways to reduce your exposure to lead in drinking water. To have your water tested for lead, or to get more information about this public health concern, please call [insert the phone number of the city or public water system]."
- B. A CWS having a billing cycle that does not include a billing within 60 days of exceeding the action level, or that cannot insert information in the water utility bill without making major changes to its billing system, may use a separate mailing to deliver the information in Appendix A as long as the information is delivered to each customer within 60 days of exceeding the action level. The CWS shall also include the "alert" language specified in subsection (A)(1).
- C. A CWS shall repeat the tasks required in subsections (A)(1) through (A)(4) every 12 months and the public service announcement specified in subsection (A)(5) every six months for as long as the CWS exceeds the lead action level.
- D. A NTNCWS that exceeds the lead action level shall, within 60 days, unless it already is repeating public education tasks under subsection (E), deliver the public education materials specified in Appendix A or Appendix B as follows:
1. Post informational posters regarding lead in drinking water in a public place or common area in each of the buildings served by the NTNCWS; and
 2. Distribute informational pamphlets or brochures on lead in drinking water to each person served by the NTNCWS. The Department may allow the NTNCWS to use electronic transmission instead of, or combined with, printed materials as long as it achieves at least the same coverage.
- E. A NTNCWS shall repeat the public education tasks required in subsection (D) at least once during each calendar year for as long as the NTNCWS exceeds the lead action level.
- F. A CWS shall include the lead public education text specified in Appendix A in all the printed materials it distributes through its lead public education program. Any additional information presented by a CWS shall be consistent with the information required in Appendix A and be written in plain language that can be understood by persons served by the CWS. In communities with a significant proportion of non-English speaking residents, public education materials shall be multilingual. A CWS may delete information about lead service lines, upon approval by the Department, if no lead service lines exist anywhere in the CWS service area. A CWS may modify public education language in Appendix A (D)(5) and (E)(2) regarding building permit record availability and consumer access to these records, if approved by the Department. A CWS may also continue to use pre-printed materials that meet the public education language requirements in R18-4-316 (1998) and Article 5, Appendix B (1998).
- G. A NTNCWS shall include the text specified in either Appendix A or Appendix B in all the printed materials it distributes through its lead public education program. A NTNCWS may delete information about lead service lines, upon approval by the

Department, if no lead service lines exist anywhere in the NTNCWS service area. Any additional information presented by a NTNCWS shall be consistent with the information in Appendix B and be in plain language that can be understood by persons served by the NTNCWS. In communities with a significant proportion of non-English speaking residents, public education materials shall be multilingual.

H. A CWS may use the text specified in Appendix B in place of the text in Appendix A and perform the tasks listed in subsection (D) and (E) in place of the tasks in subsection (A) and (C), if:

1. The CWS is a facility, such as a prison or a hospital, where the population served is not capable of or is prevented from making improvements to plumbing or installing a point-of-use treatment device; and

2. The CWS provides water as part of the cost of services provided and does not separately charge for water consumption.

I. A CWS serving 3,300 or fewer persons may omit the task required in subsection (A)(5) as long as it distributes notices containing the information specified in Appendix A to each household served by the CWS. The CWS may further limit its public education programs as follows:

1. A CWS serving 500 or fewer persons may omit the task required in subsection (A)(3). The CWS may also limit the distribution of the public education materials required in subsection (A)(4) to facilities and organizations served by the CWS that are most likely to be visited regularly by pregnant women and children, unless it is notified by the Department in writing that it must make a broader distribution.

2. If approved by the Department in writing, a CWS serving 501 to 3,300 persons may do any of the following:

- a. Omit the task required in subsection (A)(3), and

- b. Limit the distribution of the public education materials required in subsection (A)(4) to facilities and organizations served by the CWS that are most likely to be visited regularly by pregnant women and children.

J. A CWS serving 3,300 or fewer persons that delivers public education in accordance with subsection (I) shall repeat the required public education tasks at least once during each calendar year in which the CWS exceeds the lead action level.

K. A CWS or NTNCWS may discontinue delivery of public education materials if the system has met the lead action level during the most recent six-month monitoring period. A CWS or NTNCWS shall resume public education in accordance with this Section if it subsequently exceeds the lead action level.

L. Within 10 days after the end of each period the system is required to perform the public education requirements of this Section, a CWS or NTNCWS shall submit a letter to the Department demonstrating that the system has delivered the public education materials that meet the content and delivery requirements specified in this Section. The letter shall include a list of all the newspapers, radio stations, television stations, facilities, and organizations that the CWS or NTNCWS delivered public education materials to during the previous period. If a CWS or NTNCWS has previously submitted to the Department a list of all newspapers, radio stations, television stations, facilities, and organizations to which the system delivered public education materials, the system does not need to resubmit that information to the Department, if the CWS or NTNCWS certifies that there have been no changes to the list and that the public education materials were distributed to the same list submitted previously to the Department.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-317. Treatment Techniques for Acrylamide and Epichlorohydrin

A. A public water system that uses acrylamide or epichlorohydrin in a public water system, shall not exceed the following levels for the product of the dose and the monomer level:

1. Acrylamide = 0.05% dosed at 1 ppm (or equivalent).

2. Epichlorohydrin = 0.01% dosed at 20 ppm (or equivalent).

B. A public water system that uses acrylamide or epichlorohydrin shall certify annually in writing to the Department, using a third-party or a manufacturer's certification, that the product of the dose and monomer level does not exceed the levels specified in subsection (A).

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

Table 1. Repealed

R18-4-Appendix A. Lead Public Education

A public water system that exceeds the lead action level based on tap water samples collected in accordance with R18-4-310 or R18-4-313 shall deliver the public education materials contained in this Appendix in accordance with the public education delivery requirements specified in R18-4-316.

Content of written materials. A public water system shall include the following text in all the printed materials it distributes through its lead public education program. Any additional information presented by a system shall be consistent with the information below and be in plain language that can be understood by laypersons.

A. Introduction. The United States Environmental Protection Agency (EPA) and [insert name of public water system] are concerned about lead in your drinking water. Although most homes have very low levels of lead in their drinking water, some homes in the community have lead levels above the EPA action level of 15 parts per billion (ppb), or 0.015 milligrams of lead per liter of water (mg/L). Under federal law we are required to have a program in place to minimize lead in your drinking water by [insert date when corrosion control will be completed for your system]. This program includes corrosion control treatment, source water treatment, and public education. We are also required to replace the portion of each lead service line that we own if the line contributes lead concentrations of more than 15 ppb after we have completed the comprehensive treatment program. If you have any questions about how we are carrying out the requirements of the lead regulation, please give us a call at [insert water system's phone number]. This brochure explains the simple steps you can take to protect you and your family by reducing your exposure to lead in drinking water.

B. Health effects of lead. Lead is a common metal found throughout the environment in lead-based paint; air; soil; household dust; food; certain types of pottery, porcelain, and pewter; and water. Lead can pose a significant risk to your health if too much of it enters your body. Lead builds up in the body over many years and can cause damage to the brain, red blood cells, and kidneys. The greatest risk is to young children and pregnant women. Amounts of lead that won't hurt adults can slow down the normal mental and physical development of growing bodies. In addition, a child at play often comes into contact with sources of lead contamination, like dirt and dust, that rarely affect an adult. It is important to wash children's hands and toys often and to try to make sure they only put food in their mouths.

C. Lead in Drinking Water. Lead in drinking water, although rarely the sole cause of lead poisoning, can significantly increase a person's total lead exposure, particularly the exposure of infants who drink baby formulas and concentrated juices that are mixed with water. The EPA estimates that drinking water can make up 20% or more of a person's total exposure to lead.

Lead is unusual among drinking water contaminants in that it seldom occurs naturally in water supplies like rivers and lakes. Lead enters drinking water primarily as a result of the corrosion, or wearing away, of materials containing lead in the water distribution system and household plumbing. These materials include lead-based solder used to join copper pipe, brass and chrome-plated brass faucets, and in some cases, pipes made of lead that connect your house to the water main (service lines). In 1986, Congress banned the use of lead solder containing greater than 0.2% lead and restricted the lead content of faucets, pipes, and other plumbing materials to 8.0%.

When water stands in lead pipes or plumbing systems containing lead for several hours or more, the lead may dissolve into your drinking water. This means the first water drawn from the tap in the morning, or later in the afternoon after returning from work or school, can contain fairly high levels of lead.

D. Steps You Can Take in the Home To Reduce Exposure To Lead in Drinking Water.

Despite our best efforts mentioned earlier to control water corrosivity and remove lead from the water supply, lead levels in some homes or buildings can be high. To find out whether you need to take action in your own home, have your drinking water tested to determine if it contains excessive concentrations of lead. Testing the water is essential because you cannot see, taste, or smell lead in drinking water. Some local laboratories that can provide this service are listed at the end of this booklet. For more information on having your water tested, please call [insert phone number of public water system].

If a water test indicates that the drinking water drawn from a tap in your home contains lead above 15 ppb, then you should take the following precautions:

1. Let the water run from the tap before using it for drinking or cooking any time the water in a faucet has gone unused for more than six hours. The longer water resides in your home's plumbing, the more lead it may contain. Flushing the tap means running the cold water faucet until the water gets noticeably colder, usually about 15-30 seconds. If your house has a lead service line to the water main, you may have to flush the water for a longer time, perhaps one minute, before drinking. Although toilet flushing or showering flushes water through a portion of your home's plumbing system, you still need to flush the water in each faucet before using it for drinking or cooking. Flushing tap water is a simple and inexpensive measure you can take to protect your family's health. It usually uses less than 1 or 2 gallons of water and costs less than [insert a cost estimate based on flushing two times a day for 30 days] per month. To conserve water, fill a couple of bottles for drinking water after flushing the tap and, whenever possible, use the first-flush water to wash the dishes or water the plants. If you live in a high-rise building, letting the water flow before using it may not work to lessen your risk from lead, because the plumbing systems may have more, and sometimes larger, pipes than smaller buildings. Ask your landlord for help in locating the source of the lead and for advice on reducing the lead level.
2. Try not to cook with, or drink, water from the hot water tap. Hot water can dissolve lead more quickly than cold water. If you need hot water, draw water from the cold tap and heat it on the stove.
3. Remove loose lead solder and debris from the plumbing materials installed in newly constructed homes, or homes in which the plumbing has recently been replaced, by removing the faucet strainers from all taps and running the water from three to five minutes. Thereafter, periodically remove the strainers and flush out any debris that has accumulated over time.

4. If your copper pipes are joined with lead solder that has been installed illegally since it was banned in 1986, notify the plumber who did the work and request that he or she replace the lead solder with lead-free solder. Lead solder looks dull gray and, when scratched with a key, looks shiny. In addition, notify the Arizona Department of Environmental Quality about the violation.
5. Determine whether or not the service line that connects your home or apartment to the water main is made of lead. The best way to determine if your service line is made of lead is by either hiring a licensed plumber to inspect the line or by contacting the plumbing contractor who installed the line. You can identify the plumbing contractor by checking the city's record of building permits which should be maintained in the files of the [insert name of department that issues building permits]. A licensed plumber can at the same time check to see if your home's plumbing contains lead solder, lead pipes, or pipe fittings that contain lead. [Insert name of public water system], the public water system that delivers water to your home also maintains records of the materials located in the distribution system. If the service line that connects your dwelling to the water main contributes more than 15 ppb to drinking water, after our comprehensive treatment program is in place, we are required to replace the portion of the line we own. If the line is only partially owned by the [insert name of the city, county, or water system that controls the line], we are required to provide the owner of the privately owned portion of the line with information on how to replace the privately owned portion of the service line and offer to replace that portion of the line at the owner's expense. If we replace only the portion of the line that we own, we also are required to notify you in advance and provide you with information on the steps you can take to minimize exposure to any temporary increase in lead levels that may result from the partial replacement, to take a follow-up sample at our expense from the line within 72 hours after the partial replacement, and to mail or otherwise provide you with the results of that sample within three business days after receiving the results. Acceptable replacement alternatives include copper, steel, iron, and plastic pipes.
6. Have an electrician check your wiring. If grounding wires from the electrical system are attached to your pipes, corrosion may be greater. Check with a licensed electrician or your local electrical code to determine if your wiring can be grounded elsewhere. DO NOT attempt to change the wiring yourself because improper grounding can cause electrical shock and fire hazards.
7. The steps described above will reduce the lead concentrations in your drinking water. However, if a water test indicates that the drinking water coming from your tap contains lead concentrations in excess of 15 ppb after flushing, or after we have completed our actions to minimize lead levels, then you may want to take the following additional measures:
 - a. Purchase or lease a home treatment device. Home treatment devices are limited in that each unit treats only the water that flows from the faucet to which it is connected, and all of the devices require periodic maintenance and replacement. Devices such as reverse osmosis systems or distillers can effectively remove lead from your drinking water. Some activated carbon filters may reduce lead levels at the tap; however all lead reduction claims should be investigated. Be sure to check the actual performance of a specific home treatment device before and after installing the unit.
 - b. Purchase bottled water for drinking and cooking.

E. How to Obtain More Information on Lead in Drinking Water

You can consult a variety of sources for additional information. Your family doctor or pediatrician can perform a blood test for lead and provide you with information about the health effects of lead. State and local government agencies that can be contacted include:

1. [Insert the name of the city or county department of public utilities] at [insert phone number] can provide you with information about your community's water supply and a list of local laboratories that have been licensed by the Arizona Department of Health Services for testing water quality;
2. [Insert the name of the city or county department that issues building permits] at [insert phone number] can provide you with information about building permit records that should contain the names of the plumbing contractors that installed the plumbing in your home; and
3. The Arizona Department of Health Services at (602) 230-5830 or the [insert the name of the city or county health department] at [insert phone number] can provide you with information about the health effects of lead and how you can have your child's blood tested.

The following is a list of some ADHS-licensed laboratories in your area that you can call to have your water tested for lead. [Insert names and phone numbers of at least two laboratories].

Historical Note

New Appendix made by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

Appendix B. Alternate Lead Public Education

A public water system that exceeds the lead action level based on tap water samples collected in accordance with R18-4-310 or R18-4-313 may deliver the public education materials contained in this Appendix in accordance with the public education delivery requirements specified in R18-4-316.

Content of written materials. A public water system shall include the following text in all the printed materials it distributes through its lead public education program. Any additional information presented by a system shall be consistent with the information below and be in plain language that can be understood by laypersons.

A. Introduction. The United States Environmental Protection Agency (EPA) and [insert name of public water system] are concerned about lead in your drinking water. Some drinking water samples taken from this facility have lead levels above the EPA action level of 15 parts per billion (ppb), or 0.015 milligrams of lead per liter of water (mg/L). Under federal law we are required to have a program in place to minimize lead in your drinking water by [insert date when corrosion control will be completed for your system]. This program includes corrosion control treatment, source water treatment, and public education. We are also required to replace the portion of each lead service line that we own if the line contributes lead concentrations of more than 15 ppb after we have completed the comprehensive treatment program. If you have any questions about how we are carrying out the requirements of the lead regulation, please give us a call at [insert water system's phone number]. This brochure explains the simple steps you can take to protect yourself by reducing your exposure to lead in drinking water.

B. Health effects of lead. Lead is a common metal found throughout the environment in lead-based paint; air; soil; household dust; food; certain types of pottery, porcelain, and pewter; and water. Lead can pose a significant risk to your health if too much of it enters your body. Lead builds up in the body over many years and can cause damage to the brain, red blood cells and kidneys. The greatest risk is to young children and pregnant women. Amounts of lead that won't hurt adults can slow down the normal mental and physical development of growing bodies. In addition, a child at play often comes into contact with sources of lead contamination, like dirt and dust, that rarely affect an adult. It is important to wash children's hands and toys often and to try to make sure they only put food in their mouths.

C. Lead in Drinking Water. Lead in drinking water, although rarely the sole cause of lead poisoning, can significantly increase a person's total lead exposure, particularly the exposure of infants who drink baby formulas and concentrated juices that are mixed with water. The EPA estimates that drinking water can make up 20% or more of a person's total exposure to lead.

Lead is unusual among drinking water contaminants in that it seldom occurs naturally in water supplies like rivers and lakes. Lead enters drinking water primarily as a result of the corrosion, or wearing away, of materials containing lead in the water distribution system and household plumbing. These materials include lead-based solder used to join copper pipe, brass and chrome-plated brass faucets, and in some cases, pipes made of lead that connect houses and buildings to water mains (service lines). In 1986, Congress banned the use of lead solder containing greater than 0.2% lead, and restricted the lead content of faucets, pipes and other plumbing materials to 8.0%.

When water stands in lead pipes or plumbing systems containing lead for several hours or more, the lead may dissolve into your drinking water. This means the first water drawn from the tap in the morning, or later in the afternoon if the water has not been used all day, can contain fairly high levels of lead.

D. Steps You Can Take To Reduce Exposure to Lead in Drinking Water. Let the water run from the tap before using it for drinking or cooking any time the water in a faucet has gone unused for more than six hours. The longer water resides in plumbing the more lead it may contain. Flushing the tap means running the cold water faucet for about 15-30 seconds. Although toilet flushing or showering flushes water through a portion of the plumbing system, you still need to flush the water in each faucet before using it for drinking or cooking. Flushing tap water is a simple and inexpensive measure you can take to protect your health. It usually uses less than 1 gallon of water.

Do not cook with, or drink, water from the hot water tap. Hot water can dissolve lead more quickly than cold water. If you need hot water, draw water from the cold tap and then heat it.

The steps described above will reduce the lead concentrations in your drinking water. However, if you are still concerned, you may wish to use bottled water for drinking and cooking.

You can consult a variety of sources for additional information. Your family doctor or pediatrician can perform a blood test for lead and provide you with information about the health effects of lead. State and local government agencies that can be contacted include:

[insert the name or title of the facility official if appropriate] at [insert phone number] can provide you with information about your facility's water supply; and

The Arizona Department of Health Services at (602) 230-5830 or the [insert the name of the city or county health department] at [insert phone number] can provide you with information about the health effects of lead.

Historical Note

New Appendix made by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

ARTICLE 4. SPECIAL MONITORING REQUIREMENTS

R18-4-401. Special Monitoring for Sodium

A. A CWS, or a contractor on behalf of a CWS, shall conduct monitoring for sodium.

B. Each CWS, or a contractor on behalf of a CWS, shall collect one sample per water treatment plant. Multiple wells drawing raw water from a single aquifer may, with Department approval, be considered one treatment plant for purposes of determining the minimum number of sodium samples required.

C. Each CWS, or a contractor on behalf of the CWS, shall collect and analyze one sample annually for each water treatment plant utilizing a surface water source, in whole or in part. A CWS shall collect and analyze one sample every three years for each

water treatment plant utilizing only groundwater sources. The Department may require a public water system to collect and analyze water samples more frequently in locations where the sodium content is variable.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective December 8, 1998 (Supp. 98-4). Former Section R18-4-401 repealed; new Section R18-4-401 renumbered from R18-4-402 and amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-402. Special Monitoring for Nickel

- A. A CWS and NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall monitor for nickel.
- B. A CWS and NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall monitor for nickel at each sampling point as prescribed in R18-4-218.
- C. A CWS or NTNCWS, or a contractor on behalf of a CWS or NTNCWS, may composite samples for nickel as prescribed in R18-4-219.
- D. A CWS and NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall monitor for nickel as follows:
 - 1. A CWS and NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall take one sample at each groundwater sampling point once every three years.
 - 2. A CWS and NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall take one sample at each surface water sampling point annually.
- E. A CWS or NTNCWS shall reduce the required monitoring frequency for nickel when the Department makes one of the following determinations:
 - 1. Groundwater sampling points: The Department shall reduce monitoring frequency from once every three years to a less frequent basis if a CWS or NTNCWS has monitored for nickel at least once every three years for a period of nine years at the groundwater sampling point, and all analytical results were reliably and consistently below 0.1 mg/L in previous samples.
 - 2. Surface water sampling points: The Department shall reduce monitoring frequency from annually to a less frequent basis if a CWS or NTNCWS has monitored annually at the surface water sampling point for at least three consecutive years and all analytical results for nickel were reliably and consistently below 0.1 mg/L in previous samples.
 - 3. The Department may reduce monitoring frequency for nickel for a term not to exceed nine years.
 - 4. If the Department reduces monitoring frequency for nickel, a CWS or NTNCWS, or a contractor on behalf of a CWS or NTNCWS, shall take at least one sample for nickel during the reduced monitoring term.
 - 5. In determining the appropriate reduced monitoring frequency at a sampling point, the Department shall consider the following factors:
 - a. Reported concentrations of nickel from all previous monitoring;
 - b. The degree of variation in the reported concentrations of nickel; and
 - c. Other factors that may affect the concentration of nickel such as changes in groundwater pumping rates, changes in the configuration of the CWS or NTNCWS, or changes in operating procedures, stream flows, or source water characteristics.
 - 6. A decision by the Department to reduce monitoring frequency for nickel at a sampling point shall be in writing and shall explain the grounds for the Department's decision. A CWS or NTNCWS may make a written request for reduced monitoring or the Department may reduce monitoring on its own. A CWS or NTNCWS shall provide documentation of analytical results that supports a request for reduced monitoring. If a CWS or NTNCWS submits new data, or other data relevant to the public water system's appropriate monitoring frequency become available, the Department shall review the data and, if appropriate, revise its determination of monitoring frequency.
 - 7. A new sampling point is not eligible for reduced monitoring until three consecutive monitoring periods from the new sampling point have been completed.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended effective December 8, 1998 (Supp. 98-4). Former Section R18-4-402 renumbered to R18-4-401; new Section R18-4-402 renumbered from R18-4-403 and amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

ARTICLE 5. MINIMUM DESIGN CRITERIA

R18-4-501. Siting Requirements

To the extent practicable, a new public water system or an extension to an existing public water system shall be geographically located to avoid a site which is:

- 1. Subject to a significant risk from earthquakes, floods, fires, or other disasters which could cause a breakdown of the public water system or portion thereof; or
- 2. Within the flood plain of a 100-year flood, except for intake structures and properly protected wells.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2).

R18-4-502. Minimum Design Criteria

A. A public water system shall be designed using good engineering practices. A public water system which is designed in a manner consistent with the criteria contained in Engineering Bulletin No. 10, "Guidelines for the Construction of Water Systems," issued by the Arizona Department of Health Services, May 1978 (and no future editions), which is incorporated herein by reference and on file with the Office of the Secretary of State, shall be considered to have been designed using good engineering practices. Other system designs shall be approved if the applicant can demonstrate that the system will function properly and may be operated reliably in compliance with this Chapter. Minimum design criteria which are not subject to modification are listed in this Section.

B. A potable water distribution system shall be designed to maintain and shall maintain a pressure of at least 20 pounds per square inch at ground level at all points in the distribution system under all conditions of flow.

C. Water and sewer mains shall be separated in order to protect public water systems from possible contamination. All distances are measured perpendicularly from the outside of the sewer main to the outside of the water main. Separation requirements are as follows:

1. A water main shall not be placed:

a. Within 6 feet, horizontal distance, and below 2 feet, vertical distance, above the top of a sewer main unless extra protection is provided. Extra protection shall consist of constructing the sewer main with mechanical joint ductile iron pipe or with slip-joint ductile iron pipe if joint restraint is provided. Alternate extra protection shall consist of encasing both the water and sewer mains in at least 6 inches of concrete for at least 10 feet beyond the area covered by this subsection (C)(1)(a).

b. Within 2 feet horizontally and 2 feet below the sewer main.

2. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be 6 feet, measured from the center of the manhole.

3. The minimum separation between force mains or pressure sewers and water mains shall be 2 feet vertically and 6 feet horizontally under all conditions. Where a sewer force main crosses above or less than 6 feet below a water line, the sewer main shall be encased in at least 6 inches of concrete or constructed using mechanical joint ductile iron pipe for 10 feet on either side of the water main.

4. The separation requirements do not apply to building, plumbing, or individual house service connections.

5. Sewer mains (gravity, pressure, and force) shall be kept a minimum of 50 feet from wells unless the following conditions are met:

a. Water main pipe, pressure tested in place to 50 psi without excessive leakage, is used for gravity sewers at distances greater than 20 feet from water wells; or

b. Water main pipe, pressure tested in place to 150 psi without excessive leakage, is used for pressure sewers and force mains at distances greater than 20 feet from water wells. "Excessive leakage" means any amount of leakage which is greater than that permitted under the AWWA Standard applicable to the particular pipe material or valve type.

6. Requests for authorization to use alternate construction techniques, materials, and joints shall be reviewed by the Department, and such requests may be approved on a case-by-case basis.

D. A public water system shall not construct or add to its system a well which is located:

1. Within 50 feet from existing sewers unless the sewer main has been constructed in accordance with subsection (C)(5)(a) or (b) of this Section;

2. Within 100 feet of any existing septic tank or subsurface disposal system;

3. Within 100 feet of a discharge or activity which is required to obtain an Individual Aquifer Protection Permit, pursuant to A.R.S. §§ 49-241(A) through 49-251;

4. Within 100 feet of an underground storage tank as defined in A.R.S. § 49-1001(17); or

5. Within 100 feet of hazardous waste facilities operated by large quantity generators and treatment, storage, and disposal facilities regulated under the Arizona Hazardous Waste Management Act, A.R.S. § 49-921 et seq.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2).

R18-4-503. Storage Requirements

A. The minimum storage capacity for a CWS or a noncommunity water system that serves a residential population or a school shall be equal to the average daily demand during the peak month of the year. Storage capacity may be based on existing consumption and phased as the water system expands.

B. The minimum storage capacity for a multiple-well system for a CWS or a noncommunity water system that serves a residential population or a school may be reduced by the amount of the total daily production capacity minus the production from the largest producing well.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-504. Prohibition on the Use of Lead Pipe, Solder, and Flux

Construction materials used in a public water system, including residential and non-residential facilities connected to the public water system, shall be lead-free as defined at R18-4-101. This Section shall not apply to leaded joints necessary for the repair of cast iron pipes.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-505. Approval to Construct

A. The Department shall only approve an addition or a water main extension to a public water system that is in compliance with this Chapter or is making satisfactory progress towards compliance under a schedule approved by the Department. The Department shall approve a properly designed modification that can be expected to return a public water system to compliance.

B. A person shall not start to construct a new public water system, modify an existing facility, including an extension to an existing public water system, or make an alteration that will affect the treatment, capacity, water quality, flow, distribution, or operational performance of a public water system before receiving an Approval to Construct from the Department. Designing or consulting engineers may confer with the Department before proceeding with detailed designs of complex or innovative facilities. The following provisions shall apply:

1. An application for Approval to Construct, including the following documents and data, shall be submitted to the Department:
 - a. Detailed construction plans of the site and work to be done, presented in legible form and of sufficient scale, to establish construction requirements to facilitate effective review;
 - b. Complete specifications to supplement the plans;
 - c. A design report that describes the proposed construction and basis of design, provides design data and other pertinent information that defines the work to be done, and establishes the adequacy of the design to meet the system demand;
 - d. Analyses of a proposed new source of water that include:
 - i. Microbiological; physical; radiochemical; inorganic, organic, and volatile organic chemicals; and
 - ii. Microscopic particulates if the source meets the criteria of R18-4-301.01.(A); and
 - e. Other pertinent data required to evaluate the application for Approval to Construct.
2. All plans, specifications, and design reports submitted for a public water system shall be prepared by, or under the supervision of, a professional engineer registered in Arizona and have the seal and signature of the engineer affixed to them, except that an engineer not registered in Arizona may design a water treatment plant or additions, modifications, revisions, or extensions, which include extensions to potable water distribution systems, if the total cost of the construction does not exceed \$12,500 for material, equipment, and labor, as verified by a cost estimate submitted with plan documents.
3. An existing public water system shall be exempt from the plan review requirements of this Article if the public water system is in compliance with this Chapter or is making satisfactory progress towards compliance under a schedule approved by the Department if the applicable structural revision, addition, extension, or modification:
 - a. Has a project cost of twelve thousand five hundred dollars or less; or
 - b. Is made to a water line that:
 - i. Is not for a subdivision requiring plat approval by a city, town, or county;
 - ii. Has a project cost of more than twelve thousand five hundred dollars but less than fifty thousand dollars; and
 - iii. Has a design that is sealed and signed by a professional engineer registered in Arizona and the construction of which is reviewed for conformance with the design by a professional engineer registered in Arizona.
4. Upon completion of a project exempt from the plan review requirements of this Article pursuant to subsection (C), the public water system shall submit a notice of compliance which contains:
 - a. A fair market value cost estimate for the project,
 - b. The name of the design engineer and the review engineer, and
 - c. The project completion date and the total construction time.
- C. The Department shall act upon a complete Approval to Construct application submitted for approval within 30 days after its receipt.
- D. The Department shall issue an Approval to Construct only when the following conditions have been met:
 1. Plans and specifications submitted to the Department demonstrate that the proposed public water system reasonably can be expected to comply with this Chapter, including the MCLs in Article 2; and
 2. The water system is in compliance with this Chapter or reasonably can be expected to return to compliance with this Chapter as a result of the proposed construction.

E. An Approval to Construct becomes void if an extension of time is not granted by the Department within 90 days after the passage of one of the following:

1. Construction does not begin within one year after the date the Approval to Construct is issued, or
2. There is a halt in construction of more than one year, or
3. Construction is not completed within three years after the date construction begins.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-506. Compliance with Approved Plans

All construction shall conform to approved plans and specifications. In order to make a change in an approved design that will affect water quality, capacity, flow, sanitary features, or performance, a public water system shall submit revised plans and specifications to the Department for review, together with a written statement regarding the reasons for the change. The public water system shall not proceed with the construction affected by the design change without written approval from the Department. Revisions not affecting water quality, capacity, flow, sanitary features, or performance may be permitted during construction without further approval if record drawings documenting these changes, prepared by a professional engineer registered in Arizona, are submitted to the Department under R18-4-508.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-507. Approval of Construction

A. A person shall not operate a newly constructed facility until an Approval of Construction is issued by the Department.

B. The Department shall not issue an Approval of Construction on a newly constructed public water system, an extension to an existing public water system, or any alteration of an existing public water system that affects its treatment, capacity, water quality, flow, distribution, or operational performance unless the following requirements have been met:

1. A professional engineer registered in Arizona or a person under the direct supervision of a professional engineer registered in Arizona, has completed a final inspection and submitted a Certificate of Completion on a form approved by the Department to which the seal and signature of the professional engineer registered in Arizona have been affixed;
2. The construction conforms to approved plans and specifications, as indicated in the Certificate of Completion, and all changes have been documented by the submission of record drawings under R18-4-508;
3. An operations and maintenance manual has been submitted and approved by the Department if construction includes a new water treatment facility; and
4. An operator, who is certified by the Department at a grade appropriate for each facility, is employed to operate each water treatment plant and the potable water distribution system.

C. The Department may conduct the final inspection required in subsection (B)(1), at a public water system's request, if both of the following notification requirements are met:

1. The public water system notifies the Department at least seven days before beginning construction on a public water system installation, change, or addition that is authorized by an Approval to Construct; and
2. The public water system notifies the Department of completion of construction at least 10 working days before the expected completion date.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-508. Record Drawings

A. A professional engineer registered in Arizona shall clearly and accurately record or mark, on a complete set of working project drawings, each deviation from the original plan and the dimensions of the deviation. The set of marked drawings becomes the record drawings, reflecting the project as actually built.

B. The professional engineer registered in Arizona shall sign, date, and place the engineer's seal on each sheet of the record drawings and submit them to the Department upon completion of the project. The record drawings shall be accompanied by an Engineer's Certificate of Completion, signed by the professional engineer registered in Arizona, and submitted on a form approved by the Department for any project inspected under R18-4-507(B).

C. Quality control testing results and calculations, including pressure and microbiological testing, and disinfectant residual records, shall be submitted with the Engineer's Certificate of Completion together with field notes and the name of the individual witnessing the tests.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-509. Modification to Existing Treatment Process

Before a public water system may make a modification to its existing treatment process, the public water system shall submit and obtain the Department's approval for a detailed plan that explains the proposed modifications and the safeguards that the public water system will implement to ensure that the quality of the water served by the system will not be adversely affected by the modification. The public water system shall comply with the provisions in the approved plans.

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

Appendix A. Repealed

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Correction of word "sued" to "used" in subsection (71) (Supp. 96-1). Appendix A amended effective June 3, 1998 (Supp. 98-3). Appendix A repealed by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

Appendix B. Repealed

Historical Note

Adopted effective April 28, 1995 (Supp. 95-2). Appendix C renumbered to Appendix B without change effective June 3, 1998 (Supp. 98-3).

ARTICLE 6. CAPACITY DEVELOPMENT REQUIREMENTS FOR A NEW PUBLIC DRINKING WATER SYSTEM

R18-4-601. Applicability

This Article applies to new CWSs and new NTNCWSs that begin operation on or after October 1, 1999. This Article does not apply to an existing public water system.

Historical Note

New Section adopted by final rulemaking effective September 23, 1999; the A.A.R. citation was not available at the time of publication and will appear in Supp. 99-4 (Supp. 99-3). Amended by final rulemaking at 5 A.A.R. 4456, effective September 23, 1999 (Supp. 99-4).

R18-4-602. Elementary Business Plan

A. To become a new public water system, an owner shall file an elementary business plan for review and approval by the Department, on a form provided by the Department. The elementary business plan shall meet the requirements of and contain all information required in R18-4-603, R18-4-604, and R18-4-605.

B. An owner shall not commence operation of a public water system without Department approval under R18-4-606.

C. If the owner of a new public water system fails to submit a complete application, the Department shall suspend the review process and send a notice of incomplete elementary business plan to the owner. The owner shall submit the missing information to the Department within 60 days of the date of the notice of incomplete elementary business plan. If missing information is not received at the Department within the 60 day time period, the Department shall deny the elementary business plan and return the elementary business plan to the owner.

Historical Note

New Section adopted by final rulemaking effective September 23, 1999; the A.A.R. citation was not available at the time of publication and will appear in Supp. 99-4 (Supp. 99-3). Amended by final rulemaking at 5 A.A.R. 4456, effective September 23, 1999 (Supp. 99-4).

R18-4-603. Technical Capacity Requirements

An owner of a new public water system shall submit the following to the Department for a determination of technical capacity:

1. Documentation of a drinking water source adequacy minimum of 50 gallons of water per person per day for a period of 100 years, a 100 year water availability designation from the Arizona Department of Water Resources (ADWR), or a Certificate of Assured Water Supply from ADWR;
2. Documentation that the drinking water served to the public will meet the safe drinking water standards of this Chapter;
3. Documentation that infrastructure, treatment, and storage design meets the requirements of this Chapter, Articles 2, 3, and 5;
4. Documentation that the public water system is operated by a certified operator of the sufficient grade and type; and
5. Documentation that contains at least the following:
 - a. Day 1 to final build-out technical and engineering needs projections;
 - b. Proposed water system design specification and proposed uses including commercial and domestic use phases;
 - c. Information describing the life of the plant;
 - d. A demonstration that all site-specific components meet nationally recognized standards, such as those established by the American Water Works Association, National Sanitation Foundation, or Underwriter's Laboratory;
 - e. Manufacturers' specifications on components used in the construction of the water system; and
 - f. Corrective action plan to address site-specific component replacement or repair protocols based on manufacturer's recommendations or engineer's specification.

Historical Note

New Section adopted by final rulemaking effective September 23, 1999; the A.A.R. citation was not available at the time of publication and will appear in Supp. 99-4 (Supp. 99-3). Amended by final rulemaking at 5 A.A.R. 4456, effective September 23, 1999 (Supp. 99-4).

R18-4-604. Managerial Capacity Requirements

An owner of a new public water system shall submit the following information as part of the elementary business plan to the Department for a determination of managerial capacity:

1. A statement of how the public water system is owned, such as by major stockholders, board of directors, sole proprietor cooperative, governmental agency or district, corporation, limited partnership, or limited liability corporation;
2. Name, address, and phone number of owner;
3. Organizational chart of the new public water system;
4. Staff job descriptions and responsibilities;
5. Water system capital improvement plan up to the proposed full system build-out or for a 5-year projection, whichever is greater;
6. Certified operator grade and type that will be required by the new public water system, based upon water system design specifications;
7. A statement of the intent to create a CWS or NTNCWS and any intent to transfer ownership of the public water system as part of the construction plan or project phase build-out;
8. Method to ensure provision of information listed in Appendix B, item 4 to subsequent owners; and
9. A disclosure statement signed by the owner setting forth the owner's responsibility to comply with the requirements of this Article and to disclose all information relevant to the operation of the public water system upon transfer of ownership as outlined in Appendix B.

Historical Note

New Section adopted by final rulemaking effective September 23, 1999; the A.A.R. citation was not available at the time of publication and will appear in Supp. 99-4 (Supp. 99-3). Amended by final rulemaking at 5 A.A.R. 4456, effective September 23, 1999 (Supp. 99-4).

R18-4-605. Financial Capacity Requirements

An owner of a new public water system shall submit information for a 5-year financial capacity plan, or a financial capacity plan to the end of the build-out phase, whichever is longer, that demonstrates financial capacity and documents or contains all of the information listed in Appendices C and D.

Historical Note

New Section adopted by final rulemaking effective September 23, 1999; the A.A.R. citation was not available at the time of publication and will appear in Supp. 99-4 (Supp. 99-3). Amended by final rulemaking at 5 A.A.R. 4456, effective September 23, 1999 (Supp. 99-4).

R18-4-606. Review, Approval, Denial Process

- A. The Department shall review and evaluate technical capacity, based upon the requirements in R18-4-603 and Appendix A.
- B. The Department shall review and evaluate managerial capacity, based upon the requirements in R18-4-604 and Appendix A.
- C. The Department shall accept a financial determination made by the Arizona Corporation Commission (ACC) as meeting the financial capacity requirements contained in this Article for a new CWS or new NTNCWS under the jurisdiction of the ACC. The applicant shall submit documentation to the Department that verifies ACC approval of the public water system's financial capacity.
- D. The Department shall accept a financial determination as set forth in the certificate of assured water supply from the Arizona Department of Water Resources, Active Management Area Program (ADWR) as meeting the financial capacity requirements contained in this Article for a new CWS or new NTNCWS. The owner shall submit documentation to the Department that verifies ADWR approval of its financial capacity.
- E. If a new public water system does not fall under financial review jurisdiction of the ACC or ADWR, the new CWS or new NTNCWS shall submit to the Department for review a completed financial capacity portion of the elementary business plan. The Department shall review and evaluate financial capacity, based upon the requirements in R18-4-605 and Appendices A, C, and D.
- F. The Department shall notify an owner of a new public water system in writing of a deficiency in the elementary business plan or approve or deny the elementary business plan within 90 days of a receipt of a complete elementary business plan. The owner shall have 60 days from the date of a notice of deficiency to submit to the Department the information necessary to correct the deficiency in the elementary business plan. If the owner of the new public water system fails to send the requested information so that it is received by the Department within 60 days of the date of the notice of deficiency, the Department shall deny the elementary business plan and return it to the owner with a written explanation for the denial and information on the appeal process.
- G. If an owner modifies technical or managerial specifications at any time between the approval to construct and the approval of construction, the owner shall notify the Department of the need to modify the elementary business plan in the technical, managerial, and financial capacity documentation. The Department shall revoke approval of the elementary business plan if the owner fails to notify the Department within 30 days of a modification.

Historical Note

New Section adopted by final rulemaking effective September 23, 1999; the A.A.R. citation was not available at the time of publication and will appear in Supp. 99-4 (Supp. 99-3). Amended by final rulemaking at 5 A.A.R. 4456, effective September 23, 1999 (Supp. 99-4).

Appendix A**Elementary Business Plan Checklist**

Technical Capacity	Yes	No
1. Source Adequacy - Does the documentation demonstrate 50 gallons of water per person per day for 100 years or does the system have an Arizona Department of Water Resources Certificate of assured water supply?	<input type="checkbox"/>	<input type="checkbox"/>
2. Source Adequacy - Does the source approval information demonstrate that the source meets drinking water quality standards or have applicable drinking water technologies been described?	<input type="checkbox"/>	<input type="checkbox"/>
3. Infrastructure - Do the design criteria meet the requirements of R18-4-502 through R18-4-509?	<input type="checkbox"/>	<input type="checkbox"/>
4. Treatment - Do the design criteria include treatment technologies approved by ADEQ in 18 A.A.C. 4, Articles 2, 3, and 5?	<input type="checkbox"/>	<input type="checkbox"/>
5. Does the system have a certified operator of the appropriate grade and type?	<input type="checkbox"/>	<input type="checkbox"/>
6. Does the documentation include an elementary business plan containing technical and engineering needs projections for a time period covering day 1 to final build-out or for a 5-year time period, which ever is greater?	<input type="checkbox"/>	<input type="checkbox"/>
7. Does the documentation include the proposed water system design specifications and proposed uses including commercial and domestic use phases?	<input type="checkbox"/>	<input type="checkbox"/>
8. Does the documentation include an elementary business plan containing the information on the components used in the design and construction of the system along with the components life span based upon manufacturer's specifications?	<input type="checkbox"/>	<input type="checkbox"/>
9. Does the documentation include an Operations and Maintenance Plan that contains standards that are nationally recognized on all site-specific components, such as American Water Works Association, National Sanitation Foundation, or Underwriter's Laboratory?	<input type="checkbox"/>	<input type="checkbox"/>
10. Does the documentation include an operation and maintenance plan with the manufacturer's	<input type="checkbox"/>	<input type="checkbox"/>

<p>specifications on all components used in the construction of the water system?</p> <p>11. Does the documentation include an operations and maintenance plan and emergency operation plan to address site-specific component replacement or repair protocols based on manufacturer's recommendations or engineer's specifications?</p>	
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Managerial Capacity	Yes No
12. Does the documentation include ownership type? Select all that apply. Sole Proprietor Major Stockholders Board of Directors Cooperative Government Agency or District Corporation Limited Liability Corporation Partnership Other _____	N/A
13. Does the documentation include name, address, and telephone number of owner?	
14. Does the documentation include an organizational chart of owners, management, and staff with their position or job titles?	
15. Does the documentation include staff job descriptions and responsibilities?	
16. Does the documentation include a capital improvement plan up to the proposed full system build-out or for a 5-year projection, whichever is greater?	
17. Does the documentation identify the grade and type of certified operator that will be needed to operate the system according to site-specific components?	
18. Does the documentation identify the intent to create a CWS or NTNCWS?	
19. Does the documentation transfer the ownership of the water system as part of the build-out phase of the project?	
20. Does the documentation identify the policies or mechanisms to ensure that all system-specific technical, managerial, and financial information of the water system is transferred to a new owner?	
21. Does the documentation include the owner's signed disclosure statement agreeing to comply with the requirements of these Articles and a general disclosure statement agreeing to disclose all information	

relevant to the operation of the water system to any transferee of ownership? (See Appendix B).	_____
Financial Capacity 22. Is the system regulated by the Arizona Corporation Commission (ACC) or ADWR? If Yes go to Question 23. If No go to Question 25. 23. Has the system received an approval from the ACC on its fee structure, or ADWR on its financial capacity? 24. Systems regulated by the Arizona Corporation Commission or Department of Water Resources shall provide information required in 22 and 23 for the financial capacity determination review by ADEQ. 25. For New CWSs and NTNCWS NOT regulated by ACC, is all information listed in Appendices C and D included?	

Historical Note

Appendix A adopted by final rulemaking effective September 23, 1999; the A.A.R. citation was not available at the time of publication and will appear in Supp. 99-4 (Supp. 99-3). Amended by final rulemaking at 5 A.A.R. 4456, effective September 23, 1999 (Supp. 99-4).

Appendix B

Drinking Water Capacity Development Statement of Responsibility

Applicant Information: Name: Mailing Address Phone Number: Fax Number: E-mail:
Statement Information: 1) Name of Water System: _____ PWS ID# _____ 2) Ownership Type (Please check all that apply): <input type="checkbox"/> Sole Proprietor <input type="checkbox"/> Major Stockholders <input type="checkbox"/> Board of Directors <input type="checkbox"/> Cooperative <input type="checkbox"/> Government Agency <input type="checkbox"/> District <input type="checkbox"/> Public Entity <input type="checkbox"/> Corporation <input type="checkbox"/> Limited Liability Corporation <input type="checkbox"/> Other (please explain) _____ 3) Name of Owner(s): (Check one) See below Attach a separate sheet if more space is needed Owner 1: Owner 2: Owner 3: 4) Agencies with rules applicable to the Water System: (Please check all that apply) <input type="checkbox"/> Arizona Department of Environmental Quality <input type="checkbox"/> Arizona Corporation Commission <input type="checkbox"/> Arizona Department of Water Resources <input type="checkbox"/> Arizona Department of Real Estate <input type="checkbox"/> Arizona Department of Commerce <input type="checkbox"/> Arizona Department of Agriculture <input type="checkbox"/> Arizona Department of Corrections <input type="checkbox"/> Office of the Fire Marshal <input type="checkbox"/> Arizona Land Department <input type="checkbox"/> Arizona Department of Revenue <input type="checkbox"/> Arizona Department of Transportation <input type="checkbox"/> Maricopa County Environmental Services <input type="checkbox"/> Pima County Department of Environmental Quality <input type="checkbox"/> Environmental Protection Agency Region IX <input type="checkbox"/> Other(s) please specify _____

5) Statement of Intent (Select one):

☐ It IS the intent of the owner or developer of this NEW CWS or NEW NTNCWS to transfer ownership of the water system. As part of the ownership transfer, it is understood that the owner or developer has a responsibility to disclose and transfer ALL information relevant to the construction and operation of the water system to the new owner.

☐ It is NOT the intent of the owner to transfer ownership of the NEW CWS or NTNCWS within 1 year of the completion of construction of the water system.

6) Date owner expects to begin operation:

Month _____ Day _____ Year _____

7) Drinking Water Sources used: (Select all that apply)

- ☐ Ground Water
☐ Purchased Ground Water
☐ Surface Water
☐ Purchased Surface Water

8) Table of Contents of Systems Elementary Business Plan (Please check one):

☐ The Table of Contents of the Elementary Business Plan is attached.

☐ The Table of Contents of the Elementary Business Plan is summarized below.

Summary _____

9) Signature of each current owner: Check if additional signature page is attached. _____

I agree to comply with the requirements of 18 A.A.C. 4, Article 6.

Print Name: _____ Signature: _____ Date: _____

Print Name: _____ Signature: _____ Date: _____

Print Name: _____ Signature: _____ Date: _____

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Historical Note

Appendix B adopted by final rulemaking effective September 23, 1999; the A.A.R. citation was not available at the time of publication and will appear in Supp. 99-4 (Supp. 99-3). Amended by final rulemaking at 5 A.A.R. 4456, effective September 23, 1999 (Supp. 99-4).

Appendix C

Financial Capacity for New CWSs and NTNCWSs

Worksheet 1

Owner: _____

Completed by: _____ Date: _____

	Year 1	Year 2	Year 3	Year 4	Year 5
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5-Year Financial Projection	Projection	Projection	Projection	Projection	Projection
Enter Year:					
1. Beginning Cash on Hand					
a. Unmetered Water Revenue					
b. Metered Water Revenue					
c. Other Water Revenue					
d. Total Water Revenues (1a thru 1c)					
e. Connection Fees					
f. Interest and Dividend Income					
g. Other Income					
h. Total Cash Revenues (1d thru 1g)					
i. Additional Revenue Needed					
j. Loans, Grants or other Cash Injection (please specify)					
2. Total Cash Balance (1h to 1j)					
3. Total Cash Available (1+2)					
4. Operating Expenses					
a. Salaries and wages					
b. Employee Pensions and Benefits					
c. Utilities					
d. Chemicals					
e. Materials and Supplies					
f. Laboratory					
g. Contractual Services					

h. Insurance					
i. Miscellaneous					
j. Total Operations and Maintenance Expenses (4a thru 4i)					
k. Replacement Expenditures					
l. Total Operations and Maintenance expenditures plus Replacement expenditures (4j+4k)					
m. Loan Principal/Capital Lease Payments					
n. Loan Interest Payments					
o. Capital Purchases (specify):					
5. Total Cash Paid Out (4m thru 4o)					
6. Ending Cash Position (3 - 5)					
7. Number of Customer Accounts					
8. Average Annual User Charge per account (1d/7)					
9. Coverage Ratio (1h-4l)/(4m+4n)					
10. Operating Ratio (1d/4l)					
11. End of Year Operating Cash (6 - 12)					
12. End of Year Reserves					
a. Operating Reserves					
b. Debt Service Reserve					
c. Capital Improvement Reserve					
d. Replacement Reserve					

e. Other					
Total Reserves (12a thru 12e)					

Appendix C (continued)

Arizona Financial Capacity For New

CWSs and NTNCWSs

Definitions for Worksheet 1

5-Year Financial Projection	Year 1 Projection	Year 2 Projection	Year 3 Projection	Year 4 Projection	Year 5 Projection
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1. Beginning Cash on Hand	For the current year budget, use the actual cash balance. For all other years, cash on hand should equal item #12 from the previous period.
a) Unmetered Water Revenue	All cash received or estimated for water supplied to residential, commercial, industrial and public customers where the customer charge is not based on quantity, but is based on other criteria such as diameter of service pipe, room, or foot of frontage.
b) Metered Water Revenue	All cash received or estimated for water supplied to residential, commercial, industrial, and public customers where the charge is based on quantity of water delivered.
c) Other water revenues	Other cash received or estimated from sales of water, sales for irrigation, sales for resale, inter-municipal sales, or ad valorem taxes.
d) Total Water Revenues	Total 1(a) thru 1(c)
e) Connection Fee	All cash received or estimated for connection of customer service during the year.
f) Interest and Dividend Income	All cash received or estimated on interest income from securities, loans, notes, and similar instruments, whether the securities are carried as investments or included in sinking or reserve accounts.
g) Other income	Other revenues collected or estimated during the period (such as disconnection or change in service fees, profit on materials billed to customers, servicing of customer lines, late payment fees, rents, sales of assets, or ad valorem taxes (infrastructure portion)).
h) Total Cash Revenues	Add 1(d) thru 1(g)
i) Additional Revenues Needed	Additional cash needed to cover cash needs.
j) Loans, Grants or other Cash Injections	Includes loans or grants from financial institutions, inter-municipal loans, state or federal sources.
2. Total Cash Balance	Add items 1(h) thru 1(j)
3. Total Cash Available	Add items 1 and 2
4. Operating Expenses	Use actual amounts paid when completing the prior year. Estimate the amounts

	for projected years based on prior year amounts, trends, and other known variables.
a) Salaries and wages	Cash expenditures made or estimated for salaries, bonuses, and other considerations for work related to the operation and maintenance of the facility, including administration and compensation for officers and directors.
b) Employee Pensions and Benefits	Paid vacations, paid sick leave, health insurance, unemployment insurance, pension plan, and other similar liabilities.
c) Utilities	Amounts paid or estimated for all fuel or electrical power.
d) Chemicals	Amounts paid or estimated for chemicals used in treatment and distribution.
e) Materials and Supplies	Amounts paid or estimated for materials and supplies used for operation and maintenance of the new public water system other than those under contractual services.
f) Laboratory	Amounts paid or estimated for laboratory and associated services.
g) Contractual Services	Amounts paid or estimated for outside engineering, accounting, legal, managerial, and other services.
h) Insurance	Amounts paid or estimated for vehicle, liability, worker's compensation, and other insurance associated with the public water system.
i) Miscellaneous	Amounts paid or estimated for all expenses not included elsewhere (such as permit fees, training, and certification fees).
j) Total operation and maintenance expenditures	Add amounts in lines 4(a) thru 4(i).
k) Replacement expenditures	Amounts paid or estimated for replacement of equipment to maintain system integrity (capital improvement plan).
l) Total Operations and Maintenance expenditures plus Replacement expenditures	Add amounts in 4(j) and 4(k)
m) Loan Principal, Capital Lease or Loan payment	Include cash payments made or estimated for principal and interest on all loans, including vehicle loans and equipment on time payments, and capital lease payments.
n) Loan Interest payments	Include cash payments made or estimated for interest on all loans, including vehicle loans, and equipment on time payments, and capital lease payments.
o) Capital Purchases	Amount of cash outlays or estimates for items such as equipment, building, or vehicle purchases and leasehold improvements that were not a part of the initial design of the water system.
5) Total Cash Paid Out	Add amounts in 4(m) thru 4(o)
6) Total Cash Available Minus Expenditures Calculation	Take Amount in 1 and subtract Amount in 5. If this amount is positive, there is operating cash left over after all calculated expenditure obligations have been

	met. If the number is negative, there are more expenses than there are funds available to pay for the expenses to operate the water system.
7) Number of Customer Accounts	Use most recent system data or expected increases.
8) Average User Charge per Customer	Take amount listed in 1(d) and divide it by amount listed in 7.
9) Coverage Ratio	Take amount in 1(h) and subtract the amount in 4(l). Then divide that amount with the sum of 4(m) + 4(n). The equation looks like this: $[1(h) - 4(l)] / [4(m) + 4(n)]$ and measures the sufficiency of net operating profit to cover the debt service requirements of the system. A bond covenant might require the debt service to meet or exceed certain limits.
10) Operating Ratio	Take amount in 1(d) and divide it by the amount in 4(l). The equation looks like this: $1(d) / 4(l)$. This figure measures whether operating revenues are sufficient to cover operation, maintenance, replacement expenses. An operating ratio of 1:0 is the minimum for a self-supporting facility. If there are debt service requirements, the operating ratio would have to be higher.
11) End of Year Operating Cash	All non-reserved cash. Add amounts from 6 thru 12.
12) End of Year Reserves	Do not include depreciation as a reserve unless there is actually a designated depreciation reserve containing cash set aside for future expansion.
a) Operating Cash Reserve	Funds set aside to meet cash flow, operating, and seasonal fluctuations.
b) Debt Service Reserve	Funds specifically set aside to retire debt as it is scheduled.
c) Capital Improvement Reserve	Funds specifically set aside to meet long-term objectives for a major facility expansion, improvement, or the construction of a new facility.
d) Replacement Reserves	Funds specifically set aside for the future replacement of equipment needed to maintain the integrity of the facility over the useful life of the equipment.
e) Total End of Year Reserves	Add amounts 12 (a) thru 12 (d).

Historical Note

Appendix C adopted by final rulemaking effective September 23, 1999; the A.A.R. citation was not available at the time of publication and will appear in Supp. 99-4 (Supp. 99-3). Amended by final rulemaking at 5 A.A.R. 4456, effective September 23, 1999 (Supp. 99-4).

Appendix D

Water System Financial Viability Tests

Test 1: Will the proposed water system collect sufficient revenues to meet all of its projected expenses?

Measurements:

- Total Revenues - Total Expenses = Net Income > 0
- Total Revenues - One-Time Revenues - Interest Income - Other Income = Operating Revenues
- Total Expenses - One-Time Expenditures - Debt Service - Capital Outlays = Operating Expenditures

d. Operating Revenues - Operating Expenses = Net Revenues > 0

e. Operating Ratio = Operating Expenses ≤ 1 Operating Revenues

Test 2: Will the proposed water system generate reserves?

The following measurements shall be > 0 at the time submitted:

a. Operating Cash Reserve = \$ _____

b. Replacement Reserve = \$ _____

c. Working Capital = Current Assets - Current Liabilities

Test 3: Are the proposed rates reasonable compared to the median household income of the area to be served?

The following measurement shall be:

Average Annual Rates < Median Household Income* x 2.5%.

*The sources of median household income data include the most recent United States Census Bureau (USCB) data collected by the Department or generated by an impartial third party experienced in collecting income data and supplied to the Department by the applicant seeking viability determinations. Acceptable sources of income data, other than USCB data include feasibility studies, engineering reports, market studies, income surveys, or another source or collection methodology approved by the Department.

Historical Note

Appendix D adopted by final rulemaking effective September 23, 1999; the A.A.R. citation was not available at the time of publication and will appear in Supp. 99-4 (Supp. 99-3). Amended by final rulemaking at 5 A.A.R. 4456, effective September 23, 1999; Test 1(e) amended to correct a manifest clerical error (Supp. 99-4).

ARTICLE 7. CONSUMER CONFIDENCE REPORTS

R18-4-701. Applicability

This Article applies to CWSs and establishes the minimum requirements for the content of the annual consumer confidence report (CCR) that a CWS shall deliver to its customers. The CWS shall provide accurate and understandable information in the CCR on the quality of the water delivered by the CWS and characterize the risks, if any, from exposure to contaminants detected in the drinking water.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2019, effective May 10, 2000 (Supp. 00-2).

R18-4-702. General Requirements

A. A CWS shall deliver a CCR to each customer annually by July 1.

B. The CCR shall contain water quality data from the previous calendar year.

C. A new CWS shall deliver its first CCR by July 1 of the year after its first full calendar year in operation.

D. A CWS that sells water to another CWS shall deliver the applicable information required in this Article to the purchaser CWS annually by April 1, or on a date mutually agreed upon by the seller and the purchaser, and specifically included in a contract between the parties.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2019, effective May 10, 2000 (Supp. 00-2).

R18-4-703. Content of the Consumer Confidence Reports

A. A CWS shall provide to its customers an annual CCR that contains the following information on the source of the water delivered:

1. The type of the water (for example, surface water, ground water); and
2. The name, if any, and location of the body of water.

B. If a source water assessment has been completed, the CCR shall notify consumers of the availability of this information and how to obtain it. If a CWS has received a source water assessment from the Department, the CCR shall contain a brief summary of the assessment findings and the CWS's susceptibility to potential origins of contamination, using language provided by the Department or written by the CWS in consultation with the Department.

C. Each CCR shall contain the following definitions:

1. "Maximum Contaminant Level" or "MCL" means the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology; and
2. "Maximum Contaminant Level Goal" or "MCLG" means the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

D. A CCR for a CWS operating under a variance or an exemption issued by the Department or EPA shall contain the following definition:

"Variance" or "exemption" means permission from the Department or the EPA not to meet a MCL or a treatment technique under certain conditions.

E. A CCR that contains data on a contaminant for which the Department has set a treatment technique or an action level shall contain one or both of the following definitions, as applicable:

1. "Treatment technique" means a required process to reduce the level of a contaminant in drinking water.
2. "Action level" means the concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a community water system shall follow.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2019, effective May 10, 2000 (Supp. 00-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-704. Information on Detected Contaminants

A. A CCR shall contain information on the following detected contaminants:

1. Contaminants subject to a MCL, action level, or treatment technique (regulated contaminants), listed in Appendix A; and
2. Contaminants listed in Appendix B.

B. The CWS shall display in one table, or several adjacent tables, data relating to the detected contaminants in subsection (A). If the CWS includes voluntary monitoring data, those data shall be listed in a table separate from the table of detected contaminants. For detected regulated contaminants, the table shall contain:

1. The MCL for that contaminant;
2. The MCLG for that contaminant expressed in the same units as the MCL;
3. If there is no MCL for a detected contaminant, the table shall indicate that there is a treatment technique, or specify the action level applicable to that contaminant, and the CCR shall include the definitions for "treatment technique" or "action level", as appropriate, specified in R18-4-703(E)(1) and (E)(2);
4. For contaminants subject to a MCL, except turbidity and total coliforms, the highest monitoring result used to determine compliance and the range of monitoring results expressed in the same units as the MCL, as follows:
 - a. When compliance with the MCL is determined annually or less frequently, the highest monitoring result at any sampling point and the range of detected monitoring results.
 - b. When compliance with the MCL is determined by calculating a running annual average of all monitoring results taken at a sampling point, the highest average of the monitoring results and the range of all detected monitoring results.
 - c. When compliance with the MCL is determined on a system-wide basis by calculating a running annual average of all monitoring results at all sampling points, the average and range of detected monitoring results.
5. For turbidity, the highest single measurement and lowest monthly percentage of samples meeting turbidity limits specified in R18-4-302 for the filtration technology being used. The CCR shall include an explanation of the reasons for measuring turbidity;
6. For lead and copper, the 90th percentile value of the most recent sampling period and the number of sampling sites that exceed the action level;
7. For total coliform:
 - a. The highest number of positive samples collected each month for a CWS that collects fewer than 40 samples per month; or
 - b. The highest percentage of positive samples collected each month for a CWS that collects at least 40 samples per month.
8. For fecal coliform, the total number of positive samples; and
9. The likely source of detected contaminants. Specific information regarding contaminants may be available in sanitary surveys and source water assessments, and shall be used when available to the CWS. If the CWS lacks specific information on the likely source of contamination, the CCR shall include one or more of the typical origins for that contaminant listed in Appendix A that are most applicable to the CWS.

C. The table shall clearly identify any data indicating a violation of a MCL or treatment technique.

D. The CWS shall derive information in the CCR on detected contaminants from data collected to comply with monitoring and analytical requirements of this Chapter for the previous year. The table for a CWS that monitors less often than once a year for

regulated contaminants under this Chapter shall contain the date and results of the most recent sampling. The CCR shall contain a brief statement indicating that the data presented in the CCR are from the most recent testing done within the last five years in accordance with this Chapter.

E. For a detected contaminant listed in Appendix B, the table shall contain the average and range at which the contaminant was detected. The CCR may include a brief explanation of the reasons for monitoring for these contaminants.

F. If the CWS distributes water to its customers from multiple hydraulically independent distribution systems that are fed by different raw water sources, the table shall contain a separate column for each service area and the CCR shall identify each separate distribution system. Alternatively, a CWS may produce separate CCRs tailored to include data for each service area. Multiple points-of-entry into a distribution system are not necessarily considered hydraulically independent.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2019, effective May 10, 2000 (Supp. 00-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-705. Information on Cryptosporidium and Radon

A. If a CWS has performed monitoring for Cryptosporidium that indicates that Cryptosporidium may be present in the source water or the finished water, the CCR shall contain:

1. A summary of the results of the monitoring, and
2. An explanation of the significance of the results.

B. If a CWS has performed any monitoring for radon that indicates that radon might be present in the finished water, the CCR shall contain:

1. The results of the monitoring, and
2. An explanation of the significance of the results.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2019, effective May 10, 2000 (Supp. 00-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-706. Information on Violations

A CCR shall contain a clear, understandable explanation of any violation that occurred during the year covered by the CCR, the length of the violation, an explanation of any potential adverse health effects, the health effects language from Appendix C, and the steps the CWS has taken to correct a violation of any of the following:

1. A MCL, treatment technique, or action level;
2. Monitoring and reporting of regulated and unregulated compliance data;
3. Filtration and disinfection. For a CWS that has failed to install adequate filtration or disinfection equipment or processes, or has had a failure of filtration or disinfection equipment or processes, that constitutes a violation, the CCR shall contain the following language as part of the explanation of potential adverse health effects:
"Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.";
4. Lead and copper. For a CWS that failed to take one or more actions specified in R18-4-307 through R18-4-308 or R18-4-311 through R18-4-315;
5. Treatment techniques for Acrylamide and Epichlorohydrin. For a CWS that violated the requirements of R18-4-317;
6. Recordkeeping of compliance data; or
7. Violation of the terms of a variance, an exemption, or an administrative or judicial order.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2019, effective May 10, 2000 (Supp. 00-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-707. Variances and Exemptions

If a CWS is operating under the terms of a variance or an exemption issued by the Department or EPA, the CCR shall contain:

1. An explanation of the reasons for the variance or exemption;
2. The date on which the variance or exemption was issued;
3. A brief status report on the steps the CWS is taking to install a method of treatment, find alternative sources of water, or otherwise comply with the terms and schedules of the variance or exemption; and
4. A notice of any opportunity for public input in the review, or renewal, of the variance or exemption.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2019, effective May 10, 2000 (Supp. 00-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-708. Additional Information

A. A CCR shall contain a brief explanation regarding contaminants that may reasonably be expected to be found in drinking water. This explanation shall contain, at a minimum, the language of subsections (B) through (E). A CWS may include additional information.

B. The sources of drinking water include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

C. Contaminants that may be present in source water include the following:

1. Microbial contaminants, such as viruses and bacteria, that may be from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife;
2. Inorganic contaminants, such as salts and metals, that can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;
3. Pesticides and herbicides, that may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses;
4. Organic chemical contaminants, including synthetic and volatile organic chemicals, that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems; and
5. Radioactive contaminants, that can be naturally-occurring or can be the result of oil and gas production and mining activities.

D. To ensure that tap water is safe to drink, the United States Environmental Protection Agency prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. The United States Food and Drug Administration regulations establish limits for contaminants in bottled water.

E. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants in tap water and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791). Information on bottled water can be obtained from the United States Food and Drug Administration.

F. The CCR shall contain the telephone number of the owner, operator, or designee of the CWS as a source of additional information concerning the CCR.

G. In communities with a large proportion of non-English speaking residents, as determined by the CWS after consultation with the Department, the CCR shall contain information in the appropriate language regarding the importance of the CCR or contain a telephone number or address where these residents may contact the CWS to obtain a translated copy of the CCR or assistance in the appropriate language.

H. The CCR shall contain information about the time and place of regularly scheduled meetings or other opportunities for public participation in decisions that may affect the quality of the water.

I. The CWS may include additional information necessary for public education consistent with, and not detracting from, the purpose of the CCR.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2019, effective May 10, 2000 (Supp. 00-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-709. Additional Health Information.

A. A CCR shall prominently display the following language:

"Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, persons with HIV, AIDS, or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. United States Environmental Protection Agency and Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791)."

B. A CWS that detects arsenic at levels more than .025 milligrams per liter, but less than the MCL shall include in its CCR a short informational statement about arsenic. The CWS may create its own informational statement, in consultation with the Department, or the CWS may use the following language:

"The EPA is reviewing the drinking water standard for arsenic because of special concerns that it may not be stringent enough. Arsenic is a naturally-occurring mineral known to cause cancer in humans at high concentrations."

C. A CWS that detects nitrate at levels greater than 5 mg/L but less than the MCL shall include a short informational statement about the impacts of nitrate on children. The CWS may create its own informational statement, in consultation with the Department, or the CWS may use the following language:

"Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should ask advice from your health care provider."

D. A CWS that detects lead above the action level in more than 5% but less than or equal to 10% of homes sampled shall include a short informational statement about the special impact of lead on children. The CWS may create its own informational statement, in consultation with the Department, or the CWS may use the following language:

"Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and to flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791)."

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2019, effective May 10, 2000 (Supp. 00-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R18-4-710. Consumer Confidence Report Delivery and Recordkeeping

A. A CWS shall mail or otherwise directly deliver one copy of the CCR to each customer, except as provided in subsection (H) by July 1 annually.

B. A CWS shall make a good faith effort to notify its consumers who do not get water bills of the availability of the CCR. A good faith effort to notify consumers would include a use of methods appropriate to the particular CWS such as:

1. Posting the CCR on the Internet,
2. Mailing to postal patrons in metropolitan areas,
3. Advertising the availability of the CCR in the news media,
4. Publishing in a local newspaper;
5. Posting in public places such as cafeterias or lunch rooms of public buildings;
6. Delivering multiple copies for distribution by single-biller customers such as apartment buildings or large private employers,
- or
7. Delivering to community organizations.

C. A CWS shall deliver a copy of the CCR to the Department not later than the date the CWS delivers the CCR to its customers. A CWS that complies with the requirements of subsection (H) shall deliver a copy of the CCR to the Department by July 1 annually. Within 3 months of delivery of the CCR to a Department, a CWS shall send a certification to the Department that verifies that the CCR has been distributed to the customers of the CWS, or that the CWS has complied with the requirements of subsection (H). The certification shall also verify that the information in the CCR is correct and consistent with the compliance monitoring data previously submitted to the Department.

D. A CWS that sells water to another CWS shall send written verification to the Department that the seller CWS has complied with the requirements of R18-4-702(D). The written verification shall be sent to the Department within 3 months of compliance with R18-4-702(D).

E. Each CWS shall make its CCR available to members of the public upon request.

F. Each CWS that serves 100,000 or more persons shall post its current year's CCR to a publicly accessible site on the Internet.

G. Each CWS shall retain a copy of its CCR for at least 3 years.

H. Mailing waiver. A CWS that serves fewer than 10,000 people may perform the following instead of the requirements of subsection (A):

1. For a CWS that serves, more than 500, but fewer than 10,000 people:
 - a. Inform customers that the CWS will not provide copies of the CCR by mail or other direct delivery method,
 - b. Publish the entire CCR annually in at least 1 local newspaper or other news medium serving areas in which the CWS's customers are located, and
 - c. Send written notification to the Department that the CWS intends to comply with the requirements of this subsection.
2. For a CWS that serves 500 or fewer people:
 - a. Inform customers that the CWS will not provide copies of the CCR by mail or other direct delivery method,
 - b. Provide notice annually that the CCR is available upon request, and
 - c. Send written notification to the Department that the CWS intends to comply with the requirements of this subsection.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2019, effective May 10, 2000 (Supp. 00-2).

Appendix A. Regulated Contaminants

Microbiologic al Contaminants	MCL	M C L G	Major Sources in Drinking Water
1. Total Coliform Bacteria	Presence of coliform bacteria in 5% or more of monthly samples (CWSs that collect 40 or more samples per month); 1 positive monthly sample (CWSs that collect fewer than 40 samples per month).	0	Naturally present in the environment.
2. Fecal coliform and E. coli	A routine sample and a repeat sample are total coliform positive, and one is also fecal coliform or E. coli positive	0	Human and animal fecal waste.
3. Turbidity	Treatment Technique	N/ A	Soil Runoff

Radioactive Contaminants	MCL	MCL G	Major Sources in Drinking Water
4. Beta/photon emitters	4 Millirems/ Year	0	Decay of natural and man-made deposits.
5. Alpha emitters	15 Picocuries/Liter	0	Erosion of natural deposits.
6. Combined radium	5 Picocuries/ Liter	0	Erosion of natural deposits.

Inorganic Contaminant s	MCL in mg/L	MCLG in mg/L	
7. Antimony	.006	.006	Petroleum refineries; Fire retardants; Ceramics; Electronics; Solder.
8. Arsenic	.05	N/A	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes.
9. Asbestos	7 Million Fibers/Liter	7 Million Fibers /Liter	Decay of asbestos cement water mains; Erosion of natural deposits.
10. Barium	2	2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
11. Beryllium	.004	.004	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries.
12. Cadmium	.005	.005	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints.
13. Chromium	.1	.1	Discharge from steel and pulp mills; Erosion of natural deposits.
14. Copper	Action Level =1.3	1.3	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives.
15. Cyanide	.2	.2	Discharge from steel or metal factories; Discharge from plastic and fertilizer factories.
16. Fluoride	4.0	4.0	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories.
17. Lead	Action Level =.015	0	Corrosion of household plumbing systems; Erosion of natural deposits.
18. Mercury	.002	.002	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland.
19. Nitrate	10	10	Runoff from fertilizer use; Leaching from septic tanks or sewage; Erosion of natural deposits.
20. Nitrite	1	1	Runoff from fertilizer use; Leaching from septic tanks or sewage; Erosion of natural deposits.
21.	.05	.05	Discharge from petroleum and metal refineries; Erosion of natural

Selenium			deposits; Discharge from mines.
22. Thallium	.002	.0005	Leaching from ore-processing sites; Discharge from electronics, glass, and drug factories.

Synthetic Organic Contaminants including Pesticides and Herbicides	MCL in mg/L	MCLG in mg/L	Major Sources in Drinking Water
23. 2,4-D	.07	.07	Runoff from herbicide used on row crops.
24. 2,4,5-TP [Silvex]	.05	.05	Residue of banned herbicide.
25. Acrylamide	Treatment Technique	0	Added to water during sewage or wastewater treatment.
26. Alachlor	.002	0	Runoff from herbicide used on row crops.
27. Atrazine	.003	.003	Runoff from herbicide used on row crops.
28. Benzo(a)pyrene [PAH]	.0002	0	Leaching from linings of water storage tanks and distribution lines.
29. Carbofuran	.04	.04	Leaching of soil fumigant used on rice and alfalfa.
30. Chlordane	.002	0	Residue of banned termiticide.
31. Dalapon	.2	.2	Runoff from herbicide used on rights of way.
32. Di(2-ethylhexyl) adipate	.4	.4	Discharge from chemical factories.
33. Di(2-ethylhexyl) phthalate	.006	0	Discharge from rubber and chemical factories.
34. Dibromochloropropane (DBCP)	.0002	0	Runoff or leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards.
35. Dinoseb	.007	.007	Runoff from herbicide used on soybeans and vegetables.
36. Diquat	.02	.02	Runoff from herbicide use.
37. Dioxin [2,3,7,8-TCDD]	.00000003	0	Emissions from waste incineration and other combustion; Discharge from chemical factories.
38. Endothall	.1	.1	Runoff from herbicide use.
39. Endrin	.002	.002	Residue of banned insecticide.
40. Epichlorohydrin	Treatment Technique	0	Discharge from industrial chemical factories; An impurity of some water treatment chemicals.
41. Ethylene dibromide	.00005	0	Discharge from petroleum refineries.
42. Glyphosate	.7	.7	Runoff from herbicide use.
43. Heptachlor	.0004	0	Residue of banned pesticide.
44. Heptachlor epoxide	.0002	0	Breakdown of heptachlor.
45. Hexachlorobenzene	.001	0	Discharge from metal refineries and agricultural chemical factories.
46. Hexachloro-cyclopentadiene	.05	.05	Discharge from chemical factories.
47. Lindane	.0002	.0002	Runoff or leaching from insecticide used on cattle, lumber, and gardens.
48. Methoxychlor	.04	.04	Runoff or leaching from insecticide used on fruits, vegetables, alfalfa, or livestock.
49. Oxamyl [Vydate]	.2	.2	Runoff or leaching from insecticide used on apples, potatoes and tomatoes.
50. PCBs [Polychlorinated biphenyls]	.0005	0	Runoff from landfills; Discharge of waste chemicals.
51. Pentachlorophenol	.001	0	Discharge from wood preserving factories.
52. Picloram	.5	.5	Runoff from herbicide.
53. Simazine	.004	.004	Runoff from herbicide.

54. Toxaphene	.003	0	Runoff/leaching from insecticide used on cotton and cattle.
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Volatile Organic Contaminants	MCL in mg/L	MCLG in mg/L	Major Sources in Drinking Water
55. Benzene	.005	0	Discharge from factories; Leaching from gas storage tanks and landfills.
56. Carbon tetrachloride	.005	0	Discharge from chemical plants and other industrial activities.
57. Chlorobenzene	.1	.1	Discharge from chemical and agricultural chemical factories.
58. o-Dichlorobenzene	.6	.6	Discharge from industrial chemical factories.
59. para-Dichlorobenzene	.075	.075	Discharge from industrial chemical factories.
60. 1,2-Dichloroethane	.005	0	Discharge from industrial chemical factories.
61. 1,1-Dichloroethylene	.007	.007	Discharge from industrial chemical factories.
62. cis-1,2-Dichloroethylene	.07	.07	Discharge from industrial chemical factories.
63. trans-1,2-Dichloroethylene	.1	.1	Discharge from industrial chemical factories.
64. Dichloromethane	.005	0	Discharge from pharmaceutical and chemical factories.
65. 1,2-Dichloropropane	.005	0	Discharge from industrial chemical factories.
66. Ethylbenzene	.7	.7	Discharge from petroleum refineries.
67. Styrene	.1	.1	Discharge from rubber and plastic factories; Leaching from landfills.
68. Tetrachloroethylene	.005	0	Discharge from factories and dry cleaners.
69. 1,2,4-Trichlorobenzene	.07	.07	Discharge from textile-finishing factories.
70. 1,1,1- Trichloroethane	.2	.2	Discharge from metal degreasing sites and other factories.
71. 1,1,2- Trichloroethane	.005	.003	Discharge from industrial chemical factories.
72. Trichloroethylene	.005	0	Discharge from metal degreasing sites and other factories.
73. TTHMs [Total trihalomethanes]	.1	N/A	Byproduct of drinking water chlorination.
74. Toluene	1	1	Discharge from petroleum factories.
75. Vinyl Chloride	.002	0	Leaching from PVC (polyvinyl chloride) piping; Discharge from plastics factories.
76. Xylenes	10	10	Discharge from petroleum factories; Discharge from chemical factories.

Historical Note

New Appendix adopted by final rulemaking at 6 A.A.R. 2019, effective May 10, 2000 (Supp. 00-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

Appendix B. Required Monitoring for Unregulated Contaminants

A CWS serving 100,000 or more persons required to monitor for the following disinfection by-products and microbial contaminants per 40 CFR 141.142 and 141.143 shall include the results of the most recent sampling and shall report the average and range of results for the contaminant that was detected. Results need only be included for five years from the date of the last sample or until any of the detected contaminants becomes regulated and subject to routine monitoring requirements, whichever comes first.

Haloacetic Acids*	Haloacetilenitrile	Haloketones
Chlorite*	Chloral Hydrate	Total Organic Halides
Bromate*	Chloropicrin	Aldehydes
Cyanogen Chloride	Chlorate	Total Culturable Viruses

*MCLs and monitoring requirements will become effective January 1, 2002 for a CWS that uses surface water and that serves more than 10,000 persons.

A CWS required to monitor for the following contaminants per 40 CFR 141.40, shall include the results of the most recent sampling and shall report the average and range of results for the contaminant that was detected. Only results from the previous year need to be included.

Assessment Monitoring		
2,4-dinitrotoluene	2,6-dinitrotoluene	Acetochlor
DCPA Mono- Acid Degradate	DCPA Di-acid Degradate	4,4'-DDE
EPTC	Molinate	MTBE
Nitrobenzene	Perchlorate	Terbacil

Screening Survey		
1,2-diphenylhydrazine	2-methyl-phenol	2,4-dichlorophenol
2,4-dinitrophenol	2,4,6-trichlorophenol	Diazinon
Disulfoton	Diuron	Fonofos
Linuron	Low-level Nitrobenzene	Prometon
Terbufos	Alachlor ESA	Polonium-210
RDX	Aeromonas	

Pre-screen Testing		
Lead-210	Cyanobacteria	Echoviruses
Coxsackieviruses	Helicobacter Pylori	Microsporidia
Calciiviruses	Adenoviruses	

Historical Note

New Appendix adopted by final rulemaking at 6 A.A.R. 2019, effective May 10, 2000 (Supp. 00-2). Former Appendix B renumbered to Appendix C; new Appendix B made by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

Appendix C. Health Effects Language

Microbiological Contaminants

1. Total Coliform. Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
2. Fecal coliform/E. Coli. Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.
3. Turbidity. Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Radioactive Contaminants

4. Beta/photon emitters. Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.
5. Alpha emitters. Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
6. Combined Radium 226/228. Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.

Inorganic Contaminants

7. Antimony. Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.

8. Arsenic. Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
 9. Asbestos. Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.
 10. Barium. Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
 11. Beryllium. Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
 12. Cadmium. Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
 13. Chromium. Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.
 14. Copper. Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.
 15. Cyanide. Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid.
 16. Fluoride. Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Children may get mottled teeth.
 17. Lead. Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.
 18. Mercury (inorganic). Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.
 19. Nitrate. Infants below the age of 6 months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.
 20. Nitrite. Infants below the age of 6 months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.
 21. Selenium. Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.
 22. Thallium. Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.
- Synthetic Organic Contaminants Including Pesticides and Herbicides
23. 2,4-D. Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.
 24. 2,4,5-TP (Silvex). Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.
 25. Acrylamide. Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood, and may have an increased risk of getting cancer.
 26. Alachlor. Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.
 27. Atrazine. Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.
 28. Benzo(a)pyrene (PAH). Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
 29. Carbofuran. Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.
 30. Chlordane. Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.
 31. Dalapon. Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
 32. Di (2-ethylhexyl) adipate. Some people who drink water containing di (2-ethylhexyl) adipate well in excess of the MCL over many years could experience general toxic effects or reproductive difficulties.
 33. Di (2-ethylhexyl) phthalate. Some people who drink water containing di (2-ethylhexyl) phthalate in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.

34. Dibromochloropropane (DBCP). Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
35. Dinoseb. Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
36. Dioxin (2,3,7,8-TCDD). Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
37. Diquat. Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
38. Endothall. Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.
39. Endrin. Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.
40. Epichlorohydrin. Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.
41. Ethylene dibromide. Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer.
42. Glyphosate. Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.
43. Heptachlor. Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer.
44. Heptachlor epoxide. Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer.
45. Hexachlorobenzene. Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer.
46. Hexachlorocyclopentadiene. Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach.
47. Lindane. Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.
48. Methoxychlor. Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
49. Oxamyl [Vydate]. Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system effects.
50. PCBs [Polychlorinated biphenyls]. Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.
51. Pentachlorophenol. Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.
52. Picloram. Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
53. Simazine. Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.
54. Toxaphene. Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer.
- Volatile Organic Contaminants**
55. Benzene. Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.
56. Carbon Tetrachloride. Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
57. Chlorobenzene. Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.
58. o-Dichlorobenzene. Some people who drink water containing o-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.
59. p-Dichlorobenzene. Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.
60. 1,2-Dichloroethane. Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.

61. 1,1-Dichloroethylene. Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
62. cis-1,2-Dichloroethylene. Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
63. trans-1,2-Dichloroethylene. Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
64. Dichloromethane. Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.
65. 1,2-Dichloropropane. Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.
66. Ethylbenzene. Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.
67. Styrene. Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.
68. Tetrachloroethylene. Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.
69. 1,2,4-Trichlorobenzene. Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.
70. 1,1,1-Trichloroethane. Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.
71. 1,1,2-Trichloroethane. Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.
72. Trichloroethylene. Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
73. TTHMs [Total Trihalomethanes]. Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.
74. Toluene. Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
75. Vinyl Chloride. Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
76. Xylenes. Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.

Historical Note

New Appendix C renumbered from Appendix B by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1).

R12-15-811. Minimum well construction requirements

A. Well casing

- 1. Casing shall be of a sufficient strength and wall thickness to hold the borehole open and survive any necessary grouting. A person shall use only steel or thermoplastic casing in the construction of a well, unless the person has received a variance from the Director pursuant to R12-15-820. The well casing or an extension of the casing shall extend a minimum of one foot above ground level. When installing a pitless adaptor, the casing may be terminated below ground level for aesthetic reasons or freeze protection purposes. Casing made of, or which has been exposed to, hazardous or potentially harmful materials, such as asbestos, shall not be used.
- 2. All well casing joints or overlaps shall be made watertight to prevent the degradation of the water supply by the migration of inferior quality water. Except as provided in subsection (H) of this rule, any openings in the casing that will be above the water level in the well, such as bar holes, cracks or perforations, shall be completely plugged or sealed.
- 3. Thermoplastic casing shall be installed only in an over sized drillhole without driving. Thermoplastic casing shall conform with American Society for Testing and Materials Standard Specification F480-89 (1989), which is incorporated herein by reference and is on file with the Office of the Secretary of State. Rivets or screws used in the casing joints shall not penetrate the inside of the casing.
- 4. Steel casing shall be new or in like-new condition, free from pits or breaks, and shall conform with American Society for Testing and Materials Standard Specification A53-89a (1989), A139-89b (1989) or

A312/A312M-89a (1989), whichever is applicable, all of which are incorporated herein by reference and are on file with the Office of the Secretary of State.

- 5. Copies of The American Society for Testing and Materials standard specifications referred to in subsections (3) and (4) above may be obtained with these rules at the Office of the Secretary of State of the State of Arizona, State Capitol, West Wing, Phoenix, Arizona 85007; from the Department of Water Resources, Operations Division, 15 South 15th Avenue, Phoenix, AZ 85007; and from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103. This rule does not include any later amendments or editions of those standard specifications.

B. Surface seal

- 1. Except as provided in subsections (2) and (4) of this subsection, and R12-15-817(B)(1), all wells shall be constructed with a surface seal as herein provided. The seal shall consist of steel casing, one foot of which shall extend above ground level, and cement grout placed in one continuous application from the bottom of the zone to be grouted to the land surface. If a pitless adaptor is utilized, the cement grout may terminate at the bottom of the pitless adaptor. The minimum length of the steel casing shall be 20 feet. The minimum annular space between the casing and the borehole for placement of grout shall be one and one-half inches. Curing additives, such as calcium chloride, shall not exceed ten percent of the total volume of grout. Bentonite as an additive shall not exceed five percent of the total volume. The minimum length of the surface seal shall be 20 feet. Any annular space between the outer casing and an inner casing shall be completely sealed to prevent contamination of the well.
- 2. All hand-dug wells shall be constructed with a watertight curbing extending, at a minimum, from one foot above the natural ground level to the static water level, or into the confining formation if the aquifer is artesian. The curbing shall consist of poured cement grout or casing surrounded by cement grout. Concrete block with cement grout and rock with cement grout may also be used. The poured cement grout shall not be less than six inches thick. If casing is to be used, the minimum annular space between the casing and the borehole shall be three inches. Hand-dug wells shall be sealed at the surface with a watertight, tamper-resistant cover to prevent contaminants from entering the well.
- 3. All wells constructed by jetting or driving shall have cement grout placed in the annular space to a minimum depth of six feet. The minimum annular space between the casing and the borehole for placement of the grout shall be one and one-half inches.
- 4. All horizontal wells, to prevent leakage, shall be constructed with a surface seal consisting of steel casing and cement grout extending a minimum of ten feet into the land surface.

C. Access port. Every well with casing four inches in diameter or larger shall be equipped with a functional watertight access port with a minimum diameter of one-half inch so that the water level or pressure head in the well can be monitored at all times.

D. Gravel packed wells

- 1. If a gravel pack has been installed, the annular space between the outer casing and the inner casing shall be sealed, either by welding a cap at the top or by filling with cement grout from the bottom of the outer casing to the surface.
- 2. If a gravel tube is installed, it shall be sealed with a cap.

E. Vents. All vents installed in the well casing shall open downward and be screened to prevent the entrance of foreign material.

F. Removal of drilling materials

- 1. In constructing a water well, the well driller shall take all reasonable precautions to protect the producing aquifer from contamination by drilling materials. Upon completion of the well, the well driller shall remove all foreign substances and materials introduced into the aquifer or aquifers during well construction. For purposes of this subsection, "substances and materials" means all drilling fluids, filter cake, lost circulation materials, and any other organic or inorganic substances.
- 2. Materials known to present a health hazard, such as chrome-based mud thinners, asbestos products, and petroleum-based fluids, shall not be used as construction, seal or fill materials or drilling fluids.
- 3. Drilling fluids and cuttings shall be contained in a manner which prevents discharge into any surface water.

G. Repair of existing wells

- 1. If, in the repair of a well, the old casing is withdrawn, the well shall be recased in conformance with these rules.
- 2. If an inner casing is installed to prevent leakage of undesirable water into a well, the annular space between the casings shall be completely sealed by packers, casing swedging, pressure grouting or other methods which will prevent the movement of water between the casings.

H. Monitor wells

- 1. A monitor well may be screened up to ten feet above the highest seasonal static water level of record for the purpose of monitoring contaminants.

- 2. A monitor well shall be identified as such on the vault cover or at the top of the steel casing. Identification information shall include the well registration number.

I. Completion at the surface. In areas of traffic or public rights-of-way, wells may be constructed below the land surface in a vault. All other requirements in this Article shall apply.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2).

R12-15-816. Abandonment

A. Well abandonment shall be performed only by a licensed well drilling contractor or single well licensee.

B. Except as provided in subsection (F) of this Section, the owner of a well shall file a notice of intent to abandon the well prior to abandonment, on a form prescribed and furnished by the Director, which shall include:

- 1. The name and mailing address of the person filing the notice.
- 2. The legal description of the land upon which the well proposed to be abandoned is located and the name and mailing address of the owner of the land.
- 3. The legal description of the location of the well on the land.
- 4. The depth, diameter and type of casing of the well.
- 5. The well registration number.
- 6. The materials and methods to be used to abandon the well.
- 7. When abandonment is to begin.
- 8. The name and well drilling license number of the well drilling contractor or single well licensee who is to abandon the well.
- 9. The reason for the abandonment.
- 10. Such other information as the Director may require.

C. The Director shall, upon receipt of a proper notice of intent to abandon, mail a well abandonment authorization card to the designated well drilling contractor or single well licensee.

D. Except as described in subsection (F) of this Section, a well drilling contractor or single well licensee may commence abandoning a well only if the driller has possession of an abandonment card at the well site, issued by the Director in the name of the driller, authorizing the abandonment of that specific well or wells in that specific location.

E. Within 30 days after a well is abandoned pursuant to this Section, the well drilling contractor or single well licensee shall file with the Director a Well Abandonment Completion Report on a form prescribed and furnished by the Director which shall include the date the abandonment of the well was completed and such other information as the Director may require.

F. In the course of drilling a new well, the well may be abandoned without first filing a notice of intent to abandon and without an abandonment card. If the well is abandoned pursuant to this subsection without first filing a notice of intent to abandon and without an abandonment card, the well drilling contractor or single well licensee shall provide the following information in the Well Abandonment Completion Report:

- 1. The legal description of the land upon which the well was abandoned and the name and mailing address of the owner of the land.
- 2. The legal description of the location of the well on the land.
- 3. The depth, diameter and type of casing of the well prior to abandonment.
- 4. The well registration number.
- 5. The materials and methods used to abandon the well.
- 6. The name and well drilling license number of the well drilling contractor or single well licensee who abandoned the well.
- 7. The date of completion of the abandonment of the well.
- 8. The reason for the abandonment.
- 9. Such other information as the Director may require.

G. The abandonment of a well shall be accomplished through filling or sealing the well so as to prevent the well, including the annular space outside the casing, from being a channel allowing the vertical movement of water.

H. A well not penetrating an aquifer shall include a surface seal which shall be accomplished as follows:

- 1. If the casing is removed from the top 20 feet of the well, a cement grout plug shall be set extending from two feet below the land surface to a minimum of twenty feet below the land surface, and the well shall be backfilled above the top of the cement grout plug to the original land surface.

- 2. If the casing is not removed from the top ten feet of the well, a cement grout plug shall be set extending from the top of the casing to a minimum of twenty feet below the land surface and the annular space outside the casing shall be filled with cement from the land surface to a minimum of twenty feet below the land surface.

I. In addition to the surface seal required in subsection (H):

- 1. A well penetrating a single aquifer system with no vertical flow components shall be filled with cement grout, concrete, bentonite drilling muds, clean sand with bentonite, or cuttings from the well.
- 2. A well penetrating a single or multiple aquifer system with vertical flow components shall be sealed with cement grout or a column of bentonite drilling mud of sufficient volume, density, and viscosity to prevent fluid communication between aquifers.

J. Materials containing organic or toxic matter shall not be used in the abandonment of a well.

K. The owner or operator of the well shall notify the Director in writing no later than 30 days after abandonment has been completed. The notification shall include the well owner's name, the location of the well, and the method of abandonment.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2).

R12-15-822. Capping of open wells

A. The owner of an open well shall either install a cap on the well or abandon the well in accordance with R12-15-816. Within five days after capping the well, the owner of the well shall file with the Department a notice of well capping on a form approved by the Director which shall include the following information:

- 1. The name and address of the well owner.
- 2. The name and address of the person installing the cap.
- 3. The well registration number.
- 4. The legal description of the location of the well.
- 5. The date the well was capped.
- 6. The method of capping.
- 7. The type and diameter of casing.

B. If no casing exists in an open well, or if the integrity of the existing casing is insufficient to allow installation of a cap, the well owner shall install a surface seal in accordance with R12-15-811(B) prior to capping.

D. The owner of a well on which a cap is installed shall make the cap tamper resistant by welding the cap to the top of the casing by the electric arc method of welding, except that the owner of a well may make the cap tamper resistant by securing the cap to the top of the casing with a lock during temporary periods of well maintenance, modification or repair, not to exceed 30 days, or at any time if the well is a monitor well or piezometer well.

Historical Note

Adopted as an emergency effective March 2, 1989, pursuant to A.R.S. § 41-1026, valid for only 90 days (Supp. 89-1).

Emergency expired. Readopted without change as an emergency effective June 2, 1989, pursuant to A.R.S. § 41-1026, valid for only 90 days (Supp. 89-2). Emergency expired. Readopted without change as an emergency effective September 5, 1989, pursuant to A.R.S. § 41-1026, valid for only 90 days (Supp. 89-3). Emergency expired. Readopted without change as an emergency effective December 1, 1989, pursuant to A.R.S. § 41-1026, valid for only 90 days (Supp. 89-4). Emergency expired. Readopted without change as an emergency effective March 23, 1990, pursuant to A.R.S. § 41-1026, valid for only 90 days (Supp. 90-1). Permanent rule adopted with changes effective June 18, 1990 (Supp. 90-2).